

ANTHROPOLOGY



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AN INTRODUCTION TO ANTHROPOLOGY



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TORONTO

AN INTRODUCTION TO ANTHROPOLOGY

A GENERAL SURVEY OF THE EARLY HISTORY
OF THE HUMAN RACE

BY THE

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PREFACE

IN recent years the progress of scientific research in the department of prehistoric archaeology has been such that there seems to be room for a small volume setting forth the results arrived at by archaeologists in terms that can be understood by ordinary intelligent readers. The books hitherto published on the subject have been confined for the most part to special aspects of early culture, and, therefore, are not intended to cover the whole field of the life of man before history (*i.e.*, the era prior to written records). In the selection of subject matter, it has been the purpose of the author to give a *resumé* of the conclusions arrived at by specialists in their several departments, in such a manner as to present a consecutive account of the early history of the human race. References are given in footnotes to enable the serious student to investigate the evidence for himself, and frame his own conclusions. In this way it is hoped that the book may be of value

to those persons who are about to pursue a systematic course of training at the University of Oxford or London for a Diploma in Anthropology, as well as to the general reader.

It will be readily understood that in a work of this kind no attempt can be made to enter into *detailed* investigations of such complex problems as those dealing with the migrations of early culture. It must be left to Prof. Elliot Smith to verify his hypothesis by comparing the distribution of the various elements belonging to the supposed megalithic culture on a world-wide scale, and to Dr. Rivers and Mr. Perry to test the theory by means of more intensive regional studies. If their conclusions are correct, then a vital transformation must take place in our whole attitude towards the culture of savage people and its supposed primitiveness. But for the present the writer of an "introduction" to prehistoric archaeology must be content to follow the more generally accepted view, and merely state as fairly as possible the points at issue. The same applies to the controversy regarding the age of the Grime's graves and Cissbury flint-mines.

The author desires to express his indebtedness to Mr. Henry Balfour of Oxford for revising the entire MS., and, with his characteristic attention

to accuracy, enabling him to avoid many pitfalls. To Dr. W. H. R. Rivers of Cambridge, Mr. J. Reid Moir, and Mr. Demant for their invaluable assistance and suggestions; also to Mrs. James for her help with the preparation of the MS.

E. O. JAMES.

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INTRODUCTION.

A SURVEY OF THE EVOLUTION HYPOTHESIS.

ANTHROPOLOGY ("the science of man," from *ἄνθρωπος* and *λόγος*), in the usually accepted sense of the term, deals more particularly with the origin and place of man in evolution, his development as an individual and as a race; the physical and mental changes he has undergone in his struggle for existence; and lastly, his social organization and religion. The large and steadily increasing amount of material in this new field of research more than justifies its existence as a separate branch of natural science; in fact, so wide is the range of the subject that it has been found necessary to divide it into various sections. In England we employ the term "anthropology" to cover all the phenomena dealing with the earlier stages of the history of mankind, subdividing it into its several departments. The following classification proposed by the Committee for Anthropology of the University of Oxford sets forth the scope of the science :

I. PHYSICAL ANTHROPOLOGY.

(1) *Zoological*: The comparative study of the anatomical and other physical characters which determine the zoological position of man, with special reference to the group anthropomorpha.

(2) *Palaeontological*: The antiquity of man, as ascertained by geological and anatomical evidence.

(3) *Ethnological*: The comparative study of the physical characters which distinguish the principal races of mankind from each other. The classification and geological distribution of races and sub-races. The influence of environment upon physique. The elements of anthropometry, the physiology of sensation, and the methods of the comparative study of the senses.

II. CULTURAL ANTHROPOLOGY.

(1) *Archaeological*: The antiquity of man as ascertained by the earliest remains of his handiwork. The chief characteristics of the prehistoric periods, and the methods employed in determining their sequence and duration. The persistence of early conditions of culture in later times.

(2) *Ethnological*: The comparative study and classification of peoples, based upon conditions of material culture, language, and religious and social institutions and ideas, as distinguished from physical

characters. The influence of environment upon culture.

(3) *Sociological* : The comparative study of social phenomena, with special reference to the earlier history of :

- (a) Social organisation (including marriage-customs), government, and laws ;
- (b) Moral ideas and codes ;
- (c) Magical and religious practices and beliefs (including treatment of the dead) ;
- (d) Modes of communicating ideas by signs, articulate language, pictographs, and writing.

(4) *Technological* : The comparative study of the origin, development, and geographical distribution of the principal arts and industries, with their appliances.

In the following pages we shall confine our attention to that part of the subject which throws light on primeval man as distinct from modern races that have remained in a primitive state of culture, using the latter to supplement the archaeological evidence at our disposal.

Since the publication of *The Origin of Species* in 1859, the outlook of the scientific world has been entirely changed regarding the early history of mankind. Long before Charles Darwin formulated his hypothesis scientific opinion had been

inclining towards the view that species were derived from other species by some unknown law. The idea of the mutability of species is to be found in the teaching of the Greek philosophers, as, for example, Aristotle, who thought that there had been a continuous succession of animals, plants, and zoophytes, resulting from the original metamorphosis of inorganic matter, which constituted the origin of life. On this hypothesis man was no exception to the universal rule, since he was only distinguished from the other animals by certain features—by the relative size of the brain, by two-leggedness, and mental characters. But he was too impressed with intelligent design in Nature to appreciate the principle of natural selection dimly foreshadowed in the writings of Empedocles. Lucretius, who attributes all his philosophy and science to the Greeks, in his *De Rerum Natura*, gives a wonderful picture of primeval man, “strong built of ampler bones,” without knowledge of agriculture, fire or clothing, living on the products of the chase, gradually softened by the “warm hearth” and “fond caress of prattling children.” Similarly we find in the *Satires of Horace* a reflection of the current Greek thought. Man, when first he crept from out of earth’s womb, was, we are told, but a “dumb, speechless creature, with scarce human form,” fighting “with nails and double fists for acorns or sleeping-holes at night.” Thus

the speculative minds of ancient Greece had in a measure formulated the evolution hypothesis; but with the displacement of philosophy by Christianity, interest centred round the Creator rather than the creature.

The early Church was content to regard the whole realm of Nature as the work of the Divine Logos (cf. St. John i. 1), acting in conjunction with the other persons in the Blessed Trinity (Acts iv. 24). The disciples, like their Master, were absorbed in the thought of the loving Father Who "maketh His sun to rise on the evil and the good, and sendeth rain on the just and on the unjust," Who feeds the birds of the air, and clothes the grass of the fields, and in Whom man "lives and moves and has his being." St. Paul's teaching was more or less based on the Hebrew cosmogony, although the Gnostics were the first actual Christian cosmogonists. This sect assumed the existence of a good God and a Demiurge, a Divine world and a material world (*ὁλν*), a world of light and a world of darkness. The cosmos and man were created by the Demiurge, although the latter received sparks of the Divine Nature, and struggles to free himself from the bondage of the material universe. Thus, Gnosticism is a combination of Greek and Zoroastrian dualism. The Logos, who became manifest in the Christ, was set by the good God to rescue man from "the Prince of this world," and the

bondage of evil (ὑλῆ). The Fathers in controverting this heresy applied a literal interpretation to the story of the Creation and the Fall as given in Genesis. Irenaeus, Tertullian, Clement of Alexandria, Origen, Hippolytus and the Nicene Fathers rejected the Gnostic theory of the Demiurge, and emphasized the co-operation of the Logos in the work of creation.

St. Augustine distinctly formulated a theory of evolution based on the cosmogony of Genesis.¹ He said nothing of the inter-relations of species, but he emphatically declared in favour of creation by growth. The schoolmen likewise interpreted creation more or less in Aristotelian terms, even going so far as to find the origin of life in putrefaction²—a theory revived in scientific dress at the present day by Dr. Bastian. Anselm, some years before, had reconciled the creation narrative in Genesis with platonic philosophy,³ postulating the existence of the cosmos eternally in the Divine Mind. This view was taken more or less by the Mystics of the later Middle Ages. It was, however (as Huxley and Mr. A. L. Moore have pointed out), largely through the influence of Milton's *Paradise Lost* that the doctrine of special creation found its way into post-reformation theology. People have

¹ *De Genesi ad literam*, lib. v. cap. v. and xxiii.

² S. Thom. Aq. *Summa Theol.* i. lxix. 2.

³ *Monolog.* ix.

unconsciously come to regard the theory as a kind of inspired gloss on the early chapters of Genesis. Yet there is a huge difference between the text and the commentary. In the Bible we have, "And God said, Let the earth bring forth, etc.," words which are at least consistent with a gradual development. But Milton says :

" The grassy clods now calved ; now half appeared
The tawny lion, pawed to get free
His hinder parts, then springs as broke from bonds
And rampart shakes his brinded mane ; the ounce,
The libbard, and the tiger, as the mole
Rising, the crumbled earth above them threw
In hillocks : the swift stag from under ground
Bore up his branching head : " ¹

This literal interpretation of the narrative was characteristic of Protestant theologians about the time of the Reformation. Thus Luther, commenting on Genesis I. says, " Moses is writing history and reporting things that actually happened." ² Again, Calvin maintains that " God was pleased that a history of the creation should exist," and (quoting from St. Augustine) he adds that " He made a hell for the inquisitive." ³ The theory of special creation is therefore one of the many heritages of doubtful value bequeathed to us by Protestantism.

¹ *Par. Lost*, bk. vii. 414 ff. ; cf. Moore, p. 178.

² *Meldet geschenene Dingi.*

³ *Instit.* i. lxiv. 1.

Gradually this doctrine of the fixity of species took definite shape through the labours of John Ray, Milton's younger contemporary, and others, till it reached its climax in the great work of Linnaeus (1707-78), the able botanist who "found biology a chaos and left it a cosmos." The genius of Linnaeus lay in classification. In his *Systema Naturae* he placed *Homo Sapiens* as a distinct species in the order *Primates* together with the apes, the lemurs, and the bats, and further classified the varieties of man into four divisions, according to the colour of the skin and other characteristics. Nevertheless he concluded that "species tot sunt, quot diversas formas ab initio produxit Infinitum Eus, quae formae secundum generationis in inditas leges produxere plures, ab sibi semper similes."¹ Had Linnaeus carried his researches farther and tackled the question how the existing differences in species came about, he would have probably arrived at another conclusion.

Contemporary with the great botanist lived another biologist, Georges Louis Leclerc, Comte de Buffon. Like Linnaeus he attacked the subject from the hypothesis that species were endowed by the Creator with certain fixed characteristics, but he had no sympathy with the former's system of classification. "Une vérité humiliante pour l'homme c'est qu'il doit se ranger lui-même dans la classe des

¹ *Philosophia Botanica*.

animaux," he says. A further examination of the anatomical evidence, however, soon showed him that there are in the animal body organs of little or no purpose ; in fact, that each organism is in reality a combination of other organisms, and that man too " must take his place in the ranks of animals, being, as he is, an animal in every material point." This conclusion was a distinct step towards the formulation of the hypothesis of the mutability of species, and the conception of the derivation of groups of species showing structural resemblance from a common ancestor. Buffon, however, carefully avoided suggesting this theory of the origin of species, mindful of the fact that the eyes of the Sorbonne were upon him. He went so far as to hint at a possible ancestor of the horse and ass, and of the ape and man, carefully adding the saving clause that since the Bible affirms the contrary " of course the thing cannot be."

His immediate successors apparently did not share his regard for the doctrine of special creation, since both Erasmus, Darwin and Lamarck put forth almost simultaneously a theory of evolution, in which they attributed alteration in type to environment, the acquired characters becoming hereditary. The latter believed that the more complex species were developed from pre-existent simpler forms. The change, he thought, was brought about by the use or disuse of organs and other

physical conditions of life such as environment, etc. After tracing organic life back to the monad stage, in 1809 he boldly proclaimed the descent of man from the anthropoid apes, showing their anatomical resemblances, and setting forth an hypothesis of a race of quadrumanous apes, that mastered all the other animals, spreading in all directions, and gradually acquiring the power of speech and other human faculties.¹

Against this view Cuvier threw the weight of his geological knowledge. He contended that the geological ages ended with sudden catastrophes which annihilated all life, and that species were then created afresh. His great knowledge of comparative anatomy and geology rendered him a powerful adversary against the Lamarckians, more especially as the science of embryology was hardly born when Cuvier won his famous victory over the evolutionists at the Academy of Sciences at Paris in 1830.

Von Baer published in 1827 an account of the development of the chick, and at the same time showed the similarity in the mode of origin of these animals with others lower in the scale.² His further researches showed the marked resemblance between the early embryos of the vertebrates. In the course of development the fish-like qualities

¹ *Philosophie Zoologique.*

² *Epistola de ovi mammalium et hominis genesi.*

(gill-clefts, etc.) of the embryo destined to become a bird disappear, and unmistakable avian characteristics become pronounced.

Contemporary with these revelations appeared Lyell's *Principles of Geology* (1830), which showed that there is no reason for supposing the interpolation of a series of cataclysmal changes in the rocks as suggested by Cuvier. By abolishing the catastrophe theory of special creation the palaeontologist was faced with the problem of explaining the connexion between the fossil and modern forms of life, and accounting for the apparent genetic continuity between them. To-day the botanist of the Linnaean school is faced with a similar difficulty, since the apparently clear distinction between the flowering and non-flowering plants has been broken down by the discovery of the connecting links in the *Lycopodiaceae*, *Rhizocarpeae*, and *Gymnospermeae*. The groups of fungi, algae, and licheneae have now completely run into one another, and when the lowest forms of each are alone considered, even the animal and vegetable kingdoms cease to have a definite dividing line.

But perhaps the greatest opponent of the doctrine of special creation is the science of comparative embryology. Among other things it has shown the existence of numerous rudimentary organs in the bodies of man and beast. The whale, for instance, possesses in the embryo state a complete

set of teeth together with rudimentary hind legs, furnished with bones, joints and muscles, of which there is no trace externally. The teeth disappear before birth, but the vestigial legs remain, though concealed from view within the body. The vermiform appendix, the canine teeth, the caecum, the coccyx, the inter and supra condyloid foramina of the humerus, are rudimentary or vestigial organs, useless in the human economy, which testify to the fact that "the original form of all organisms is one and the same, and that out of this one form, all, the lowest as well as the highest, are developed in such a manner that the latter pass through the permanent forms of the former as transitory stages."¹ Mr. Robert Chambers in his famous *Vestiges of the Natural History of Creation* (1844) pointed out that on the hypothesis of special creation the existence of rudimentary organs "could be regarded in no other light than as blemishes or blunders."² On the other hand, on the theory of a genetic connexion between the different forms of species they become intelligible and exactly what would be expected. "Thus we can understand," says Darwin, "how it has come to pass that man and all other vertebrate animals have been constructed on the same general model,

¹ Quoted from Meckel in Osborn's *From the Greeks to Darwin*, p. 212.

² *Ibid.* p. 202.

why they pass through the same early stages of development, and why they retain certain rudiments in common. Consequently, we ought frankly to admit their community of descent: to take any other view is to admit that our structure, and that of all the animals around us, is a mere snare to entrap our judgment. This conclusion is greatly strengthened if we look to the members of the whole animal series and consider the evidence derived from their affinities or classification, their geographical distribution and geological succession.”¹ This conclusion had in a measure been reached by Goethe (1749-1832), who was the first to use the evolution idea as a guiding principle in the interpretation of vestigial structures in man. At the same time he realised that organisms try to compromise between specific inertia and individual change. The Goethian theory of an inherent progressive impulse which lifts organisms from one stage of organisation to another influenced Chambers in the production of the *Vestiges*.

Three years after the publication of the *Vestiges* M. Boucher de Perthes, who had been working for years on the gravel beds of the Somme, exhibited a number of flint implements associated with extinct fauna in the high terrace river gravel beds. This was by no means the first time that prehistoric flints had been laid bare. Towards the end

¹ *Descent of Man*, p. 25.

of the seventeenth century the first recorded discovery was made in England. A fine pear-shaped implement—obviously a human artefact—was found, with the tooth of an extinct elephant, opposite to Black Mary's, near Grays Inn Lane in London. This was described as a British weapon, and put in the Sloane collection as such. Stone implements of the Neolithic type had already been found in Italy, and placed in the Vatican Museum as thunderbolts—the explanation of stone axes, etc., given by writers in the Middle Ages, such as Gesner and Agricola. The flint arrowheads which were found from time to time on the surface of the ground were regarded by the uncultured folk as the weapons of a mythological race that inhabited the earth in former days. Several people, acquainted with native customs, who were therefore familiar with the use of flints by aborigines, suggested that these so-called thunderbolts were in reality human artefacts,¹ but their true significance was not recognised till 1797, when Mr. John Frere, in describing his discoveries at Hoxne in Suffolk, referred these implements to a very remote period indeed, and to a people who had not the use of metals.²

¹ Mercati, physician to Clement VIII., at the end of the sixteenth century appears to have been the first to assign the flints to a people unacquainted with bronze and iron.

² *Archaeologia*, xiii. p. 204.

In the next century geologists and archaeologists worked together, and concluded that the implements associated with gravel beds and extinct mammals must be connected. In 1806 a commission was appointed to investigate the geology of Denmark. This led to the examination of the famous kitchen middens (shell mounds) and the dolmens, and in consequence to the collection of a vast quantity of flint implements, which in due course were arranged and classified in chronological order. In 1825 the Rev. J. MacEnery, the Roman Catholic chaplain at Tor Abbey, explored Kent's Cavern near Torquay, in company with Mr. Northmore, and found flint implements in association with the remains of the cave-bear and cave-hyena, below a thick, continuous sheet of stalagmite. Three years later a similar discovery was made in France by Tournal and Christol, and shortly after (1833) Schmerling described his explorations in the caves near Liège, in which flints were not only associated with the bones of such extinct animals as the mammoth, woolly rhinoceros, etc., but also with a few human remains. Then came the afore-said researches of Boucher de Perthes between 1839 and 1846, which led not only to archaeologists assigning to man a tremendous antiquity corresponding to that of the fauna of the Pleistocene or Glacial epoch, but also suggesting that at first man was but a tool-making animal. This latter

conclusion was greatly supported by the discovery of human remains—to be described in the subsequent chapters—bearing a striking resemblance to the anthropoid apes, and primitive man of to-day.

Contemporary with these finds there appeared in 1859 the epoch-making work by Charles Darwin, *The Origin of Species*. In this volume, which has probably influenced human thought more than any other book of modern times, Darwin summarised the former evidence in favour of interpreting creation in terms of evolution; and, at the same time, enunciated the principle upon which progressive changes are brought about. He accumulated a vast store of facts to show that the origin and development of species is due to natural selection in the struggle for existence. A. R. Wallace had come to the same conclusion quite independently at the same time. The latter was careful to point out, however, that although natural selection explains the origin of man's physical nature, it is altogether inadequate when applied to his spiritual and intellectual nature.

Both Darwin and Wallace found in Malthus' article on Population "the long-sought clue to the effective agent in the evolution of organic species."¹ In this essay Malthus showed that disease, accidents, famines and war act as "positive

¹ Wallace, *My Life*, 1905, vol. i. p. 232.

checks to increase," and keep down the population of savage races to a lower average than that of civilized peoples. Darwin and Wallace independently applied this line of argument to the struggle for existence in the animal kingdom, and came to the conclusion that this self-acting process would necessarily improve the race, because in every generation the inferior would inevitably disappear, and the fittest survive.¹ Things now began to move. In 1863 Lyell, in his *Geological Evidences of the Antiquity of Man*, showed how the ape-like characters of the skeleton found at Neander on the banks of the river Dussel, in Rhenish Prussia, supported Lamarck's doctrine of progressive development and transmutation. Subsequently he carefully reviewed all the evidence at that time available, in favour of the existence of primeval man in the Glacial period, concluding that the implements found at St. Acheul on the Somme belonged to the early Pleistocene (*i.e.* Glacial) Age.

The newly formulated theory of the origin of species met with serious opposition both in scientific and in theological circles; but the hypothesis was confirmed from every available source, in addition to the able writings of Prof. Huxley, Romanes, Weismann, and Sully, to say nothing of those of such speculative students as Ernst

¹ *Op. cit.* p. 361; cf. Darwin, *Life and Letters*, i. p. 83.

Haeckel, Herbert Spencer, etc. Controversies have arisen from time to time over some of the details of the scheme of development. Thus, the Neo-Darwinian school, headed by Weismann, maintain that natural selection explains all transformation of species, while Spencer, Haeckel, Cope, etc., adhere to Darwin's original hypothesis of transmission of the effects of use and disuse. Certain rearrangements of and additions to the original hypothesis as set forth by Darwin have been made of late years. New facts have been added, such as Mendel's botanical researches in heredity of characters, which strengthen the position considerably.

As we shall have occasion to show in the following pages, no branch of natural science has contributed more to the theory of evolution than anthropology—"the child of Darwin"—and no line of thought has more materially reacted on religion for good than this doctrine of development. It has shown the Creator in an entirely new light; it has unfolded an aspect of the Divine Mind and Purpose in creation which was altogether hidden from view by the quasi scientific-theological dogma of special creation. At first, of course, the new theory seemed likely to prove a deadly enemy to the theologian. Hitherto Paley had been the recognised authority on the order of nature. The substitution of Darwin and evolution for this

theologian and his metaphysical explanation of the universe, naturally raised a storm of indignation in the breasts of pious souls committed to the doctrine of special creation. Consequently "Christians in all good faith set to work to defend a view which has neither Biblical nor patristic, nor mediaeval authority."¹

Mr. Darwin himself endeavoured to show, however, that "the theory of evolution is quite compatible with the belief in a God."² In fact, he concludes *The Origin of Species* by saying, "there is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one." As Prof. Tyndall has wisely remarked, the evolution hypothesis "does not solve—it does not profess to solve—the ultimate mystery of this universe."³ So far then as the "origin of species" is concerned we may conclude with Huxley that "evolution does not come into contact with Theism, considered as a philosophical doctrine. That with which it does collide, and with which it is absolutely inconsistent is the conception of creation which theological speculators have based upon the history narrated in the opening of the Book of Genesis." Similarly, he explains that "Anthro-

¹ *Science and the Faith*, p. 180.

² *Life and Letters*, i. p. 307.

³ *Scientific Use of the Imagination*, p. 49.

pology has nothing to do with the truth or falsehood of religion—it holds itself absolutely and entirely aloof from such questions—but the natural history of religion, and the origin and growth of the religions entertained by the different tribes of the human race, are within its proper and legitimate province.”¹ It is not creation or the existence of a Creator, still less the matter of a final revelation of God to man in Christ, that evolution and anthropology disproves, but merely the so-called “Mosaic” cosmogony. The true purpose of this ancient myth has been ably set forth by the researches of the late Canon Driver and others.

It is hardly necessary to point out in a work of this kind that myth is not so much untruth as the childhood stage of history before it has drawn a clear distinction between imagery and actual occurrence, between fancy and fact. The problems of creation, the origin of man, and of evil, the beginning of social organization, and the distribution of races, are cast into narrative form in language suitable for the mental capacity of the people for whom they are written. God teaches His people “precept upon precept, line upon line, here a little and there a little.” The caves and rocks had not yet revealed their secret when the opening chapters of Genesis were written. The primitive mind asked “Whence came man?” “How does he differ

¹ *Brit. Ass.* Dublin, 1878. .

from the beasts ? ” Such questions as these, as we hope to be able to show, were answered with child-like wisdom and fascinating spirituality freed from the crude and gross mythologies of those who “ had not the fear of God before their eyes.” The book of Genesis was written to teach religious truth, and to this end human tradition was made the vehicle of bringing home to the minds of its original readers certain spiritual realities. Matters that are discoverable by human reason, and the means of investigation which God has placed within the reach of man’s faculties, are not the proper subjects of Divine revelation, any more than the material facts of nature are the concern of revealed religion.

It is to the successive discoveries of a series of human fossil remains that have been made since the middle of the last century that we must turn to ascertain the true history of early man, and the gradual process of development through which he passed ere he became *Homo sapiens*. In the forthcoming pages we shall endeavour to set forth in some detail the anthropological and archaeological evidence which has accumulated since the days of Lucretius, Lamarck, Darwin and Lyell, and completely verified the anticipations of these original thinkers. On such matters the Bible can throw little light. The old belief that “ there are just as many species of plants and animals as there were different forms originally created by

the Infinite Being ; and that these different forms, according to the laws of reproduction imposed upon them, produced others, but always forms like themselves," has yielded to a " view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one ; and, that whilst this planet has gone cycling on according to the fixed laws of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being evolved."

CHAPTER I.

THE ORIGIN AND ANTIQUITY OF MAN.

So long as man was believed to have come into the world as a fully equipped being—the last of a series of special creations—there was little room for scientific research in the matter of prehistoric man, although even as long ago as 1843 Dr. J. C. Prichard, who may be regarded as the founder of modern anthropology, wrote, in his *Natural History of Man*: “The organised world presents no contrasts and resemblances more remarkable than those which we discover on comparing mankind with the inferior tribes. That creatures should exist so nearly approaching to each other in all the particulars of their physical endowments and capabilities, would be a fact hard to believe if it were not manifest to our observation. The differences are everywhere striking: the resemblances are less obvious in the fulness of their extent, and they are never contemplated without wonder by those who, in the study of anatomy and physiology, are first made aware how near is man in his

physical constitution to the brutes. In all the principles of his internal structure, in the composition and functions of his parts, man is but an animal. The lord of the earth, who contemplates the eternal order of the universe, and aspires to communion with its invisible Maker, is a being composed of the same materials, and framed on the same principles, as the creatures which he had tamed to be the servile instruments of his will, or slays for his daily food. The points of resemblance ; they extend to the most recondite arrangements of that mechanism which maintains instrumentally the physical life of the body, which brings forward its early development and admits, after a given period, its decay, and by means of which is prepared a succession of similar beings destined to perpetuate the race."

Since these words were written more than half a century has elapsed, during which time Lamarck's theory of the development of species has been enlarged into a definite scheme of evolution depending upon natural selection, the survival of the fittest in the struggle for existence and the hereditary transmission of acquired characters. By many infallible proofs, some of which have been briefly considered, the doctrine has won its way to universal acceptance by those who are acquainted with the facts. The science of anthropology, whose business is to study man as a unit

THE STAGES OF PREHISTORIC CULTURE.

Geological Age.		Culture.	Human Races.	Fauna.
TERTIARY ERA. (Pinck estimates duration as 5 million years.)				
{ Eocene. Oligocene. Miocene. Pliocene.		Reutelian (eoliths).		{ Mammals and Apes. Crocodiles, etc. { Mastodon, Sabre-toothed tiger, Anthropoids. { Elephas merid.: Rhinoceros Etruscus.
<hr/>				
QUARTERNARY ERA.		(Rostro-Carinales.)	Pithecanthropos.	
1st Glacial phase	Maffian		Eoanthropus.	{ Rhinoceros merckii. Cave bear, Elephas antiquus, Mammoth.
1st Interglacial "	Mesvinian.	Pre-Palaeolithic.	Galley Hill (?)	
2nd Glacial "	Strépyan.		Homo Heildel- bergensis.	{ Hippopot., Trogontherium.
2nd Interglacial "	Chellean.	Lower-Palaeolithic.	Homo Neander- thalensis.	
	Acheulean.			{ Elephas Primitivus, Mammoth, Rhinoceros ticho- rinus, Horse, Bison.
	Mousterian.	Mid-Palaeolithic (Cave period).†		
3rd Glacial "	Aurignacian.	Upper-Palaeolithic.	Homo Aurignac :	{ Reindeer, Elk, Bison, Mani- moth, Stag, Arctic Fox.
3rd Interglacial "	Solutréan.		{ Grimaldi.	
4th Glacial "	Magdalenian.		{ Cro-Magnon.	
	Azilian.			

Neolithic

(lasted about 15,000-
25,000 years).

Modern fauna.

Barrow types.
Mediterraneans.
Alpines, Nordics, etc.

RECENT.

Copper (from about B.C. 3000 in Europe).
Bronze " B.C. 2500 "
Early Iron (Hallstatt, B.C. 1000 "
Later Iron (La Tène and Late Celtic), B.C. 300.

The numbers are merely given as very rough guides. It should be remembered that the later cultures vary in different regions. Thus Hungary was in the Stone Age at the beginning of the Christian Era, and Australia is still in a prehistoric state of culture.

in the animal kingdom, has therefore become one of the most prominent and fascinating branches of this method of regarding the world of nature. Closely allied to it are other sciences. Geology and palaeontology investigate the secrets hidden in the rocks, and thus prepare the way for the anthropologist, by telling him the age of the deposits in which human remains are discovered, and identifying the associated prehistoric fauna. The anatomist and physiologist explain the structure and functions of the human body, while the psychologist deals with the operations of the human mind. Ethics treat of man's duty to his neighbour, and theology deals with his duty to his God, and God's relation to him. Philology is concerned with the origin, development and racial significance of language. Sociology, technology and prehistoric archaeology investigate the social and legal organization, customs, institutions, artefacts, etc., of man from the earliest times onwards. Thus, the *complete* anthropologist must be acquainted, though perhaps not very intimately, with all these allied sciences.

Before proceeding to give some idea of the progress that has been made during the last fifty years in investigating the early history of humanity and civilization from the new standpoint we will first briefly survey the geological and archaeological situation. The geologist divides the earth's

strata into definite ages, of which the earliest to contain indisputable evidence of human remains is the **Pleistocene Period**. The duration of this period is variously estimated. Prof. Sollas regards the deposits which were laid down during the age as forming, when superimposed, a depth of 4000 feet. He estimates that the formation has proceeded at the rate of a foot per century, and that therefore the collective deposits of the Pleistocene period have taken approximately 400,000 years to form.¹ Prof. Rutot thinks that 140,000 years will suffice to account for the formation of the Pleistocene gravels of Belgium, and therefore argues that what applies to Belgium applies to the rest of Europe. Penck, on the other hand, requires at least half a million years to account for the changes produced by Alpine glaciers during the Pleistocene phases of glaciation. Prof. Keith is content with an Ice Age lasting from 450,000 to 700,000 years. In the present state of our knowledge the estimates are little better than guesses, although rough calculations have their value as rough guides of the enormous antiquity of primeval man.

Beyond the Pleistocene we enter the **Pliocene Period** of the earth's geological history. The presence of man in this age is still *sub judice*, as we shall see when we come to discuss the problem in

¹ *Nature*, 1900, vol. lxii. p. 481.

its various aspects. Suffice it to say at this juncture that the Palaeolithic Period of archaeology corresponds roughly to the Pleistocene of the geologist, while the pre-palaeolithic or Eolithic Period extended far back into the Tertiary era.

During the Pleistocene epoch there was a distinct change in the fauna from time to time, due to the alteration in climate. In the temperate intervals the richly wooded and well-watered plains of Europe became happy hunting grounds for large herds of animals grazing over the verdant plains, together with a number of rhinoceri and mammoths seeking their pasture in the fresh herbage of the forest. Ranging the moors were troops of elephants and elks ; the bear watched over her young in the cave ; the hippopotamus sported among the gigantic foliage, or plunged majestically into the river, while the cave-lion, the hyena, and other beasts of prey lay in wait amongst the dark thickets and large rocks ready to spring upon the herds of grazing animals or hippopotamuses hurrying to the water. Then came the north winds, and with them the return of glacial conditions. Pursuer and pursued alike were caught as in a trap, and the majority left but their carcasses as evidence of their existence on the earth. Those that sought safety in flight were sooner or later exterminated. This fate befell the hippopotamuses, and also one or two species of elephant. *Elephas anti-*

quus, *Trogontherium*, *Machairodus* or *Trucifelis*—the early cat—and a species of beaver, *Elastomotherium*, likewise perished in the Drift period. Other animals, like the lion and hyena, withdrew to the sunnier south and there lingered on till the glacial conditions passed away.

On the other hand, according to Von Zittel, an immigration of cold-loving animals took place, which still survive in the Arctic regions, on the Asiatic Steppes, and in the high mountain ranges. These mixed with the old drift fauna surviving in the temperate zone. The thick woolly rhinoceros (*Rhinoceros antiquus*) and the woolly-haired mammoth (*Elephas primigenius*), together with *Rhinoceros merckii*, were able to defy the raw climate and thus were preserved. The reindeer followed the musk ox and other arctic fauna northwards, and pastured in large herds on the edges of the glaciers. The ibex, chamois, Alpine hare, marmot, etc., that now live on the Alps, have also survived.

According as the glaciers advanced or receded, the animals of the drift were forced southwards, or wandered northwards. During the inter-glacial phases, the mammoth especially seems to have penetrated far to the north of Europe. In consequence of these oscillations in the climatic conditions of the Drift era we have to distinguish the pre-glacial and inter-glacial phases as warmer

sub-periods of the glacial epoch. Prof. Sollas illustrates these revolutions of climate from the Hötting¹ breccia, and, notwithstanding Prof. Lepsius' criticism of the doctrine of interglacial episodes as set forth by this stratum, we may with advantage refer to it as an example in favour of glacial oscillations.²

This breccia consists of fragments of a dark grey dolomite limestone, cemented together by a reddish marly matrix. The rock on which it rests is a dark blue clay containing scratched glacial boulders; it is a true boulder clay, and represents a moraine of the third glacial phase. Since the breccia overlies this, it must be of later date. Higher up, at a height of about 2500 to 3000 feet, we encounter a second deposit of boulder clay, a moraine formed during the fourth or last glacial episode. This rests directly upon the smooth surface of the breccia, which must therefore be of earlier date. Thus the breccia is older than the last glacial phase, and younger than the last but one, and may provisionally be regarded as representing an interglacial epoch, since it contains numerous fossil remains of non-alpine flora.³ From this evidence Penck concludes that

¹ Hötting is a village on the northern slope of the Inn valley, near Innsbruck.

² *Ancient Hunters*, pp. 24-28.

³ Cf. R. von Wettstein, *Die Fossile Flora der Höttingen Breccia*.

the climate of Innsbruck in the days of the Hötting breccia was 2° C. warmer than it is now; and therefore the snow-line stood 1000 feet above its present level. That is to say, only the higher peaks of the Alps were snow-clad.

Thus the Hötting region furnishes us with geological evidence of the oscillations of climate in the Glacial period. The lower boulder clay, representing the third glacial phase, witnesses to a time when the snow-line of the Alps had descended 4000 feet below its existing level, and the valley of the Inn was filled with ice; the Hötting breccia, representing the third interglacial phase, testifies to a time when the ice had disappeared and the mountains had been denuded of their snow, when also forest growth, thickets of rhododendrons, and a quantity of flowering annuals covered the bare rocks, and adorned the dreary expanses of boulder clay. The upper boulder clay, representing the fourth and last glacial phase, witnesses to a final advance of the ice when the snow-line again crept down to its previous level, 5000 feet below that of the Hötting interval, and glaciers replaced the forests of the Inn.

Space prevents any further discussion of the vexed question of the various stages in the Glacial period. The subject is really one of geology, though its bearing on anthropology is of the utmost importance. Looking at it from a purely un-

biased standpoint, we feel that the general scheme of four Ice Ages separated by interglacial phases, as suggested by James Geikie, Penck, Sollas, and Bruckner, is supported by stronger evidence than the arrangement advocated by the French school—Boule, Breuil, Obermaier, etc.—or that of Messrs. Dawkins and Lamplugh, in this country.

The appearance of the human race on the earth is supposed to belong to a past more remote than the beginning of the Glacial period, although the evidence of the existence of man in very early days is somewhat unconvincing. It is difficult to definitely assign any human remains except flints to the Pliocene, although Dr. Eugene Dubois, the discoverer of the famous *Pithecanthropus Erectus*—the ape-man of Java—refers the strange creature he unearthed at Trinil to the Tertiary epoch.

The story of *Pithecanthropus* is well known to anthropologists. The site lies on the east bank of the Solo, a stream which rises among the volcanic hills in the centre of Java. From the deposits of the east bank of the Solo, Dr. Dubois, between 1891 and 1894, removed fossil bones representing twenty-seven different kinds of animals, which he assigned to the late Pliocene. Below the fossiliferous bed is a stratum of conglomerate, under which is a layer of clay, resting on a marine deposit containing fossil shells of early Pliocene type. It was in the fossiliferous bed, among the late

Pliocene (?) fauna, that a skull-cap, a human thigh bone (left), and two molar teeth were discovered. In his memoir, which he published in 1894, he assigns the remains to an animal having an erect attitude like man, and a brain case with mixed characters, partly simian and partly human. Thus he named it *Pithecanthropus Erectus*, because, although it possessed the human erect posture, yet it presented many ape-like traits. It occupied, in fact, according to Dubois, a position midway between anthropoid apes and man. Therefore it was the harbinger of a family of "Missing links."¹

Unfortunately, however, the bones, though found in the same strata, were some distance apart, and therefore it has been suggested that they may not belong to the same individual. The femur is almost unanimously regarded as human, but expert opinion is divided over the teeth, some regarding them as simian, others as human. This testifies to their intermediate character. The chief interest, however, attaches to the calvaria or skull-cap. Prof. Cunningham emphasizes the similarity it bears to the gibbon; Prof. Schwalbe sees more resemblance to the chimpanzee, while both agree that it is simian rather than human. The opinion of anatomists is thus divided. Six

¹ *Pithecanthropus Erectus*: eine menschenähnliche Uebergangsform aus Java. Cf. Royal Society of Dublin, 1895: Dubois.

authorities regard the skull as human and six describe it as simian, while eight (mostly French) consider it to be intermediate, *i.e.* a missing link. The forehead recedes more than that of the chimpanzee, but the length and breadth of the skull is well within the range of human dimensions. The cranial capacity, however, is considerably reduced by the thickness of the supra-orbital torus in front, and the occipital wall behind. The capacity of an average European man is about 1500 c.c., and that of the highest apes 600 c.c. A Tyrolese skull has been found to only measure 880 c.c., and a female skull in Peru 920 c.c., but these are exceptional cases. Sir W. Turner found the capacity of an Australian woman's skull to be limited to 930 c.c., and that of a Dravidian Bheel to be 940 c.c.¹ The normal cubic content of the cranium in Australia is about 1250 c.c. to 1350 c.c. Dubois estimated the volume of the head of *Pithecanthropus* at 850 c.c., a calculation rather lower than that arrived at by other investigators of the creature. But even making allowance for a reduced estimate, the brain capacity of *Pithecanthropus* is about half-way between the highest ape and the lowest men. Nevertheless it should be remembered in this connexion that the size of the skull-cap, or even of the brain itself, is by no

¹ *Trans. Royal Soc. Edin.* 1911, xlvii. p. 456. Cf. *Ancient Hunters*, p. 38.

means a safe guide in estimating mental capacity. Some of the most primitive remains show an exceedingly large calvaria. The capacity of several of the Neanderthal type of crania, for example, often exceeds, or at least equals, that of the modern European. Furthermore, it is by no means in accordance with the general character of the artefacts unearthed from the Pliocene strata by Mr. Reid Moir, Mr. Benjamin Harrison, etc., to assign to "Eolithic" man a small mental capacity.

Quite apart from the vexed question of cranial capacity, a cast of the brain reveals that "the average area of the exposed superficies equals half the average area in twelve European hemispheres, but at least double that in the brain of a large chimpanzee or of an orang-utan. This seems to indicate that our fossil being possessed already a certain amount of power of speech."¹ On the other hand, the pithecoïd condition in the parietal lobe lying between the centres for sensation show that the brain of *Pithecanthropus* was unable to reason by the association of memorised ideas. That is to say, the ape-man was hardly human in intellect.

Adding to this evidence the definitely human femur, and the animal represented by the remains justifies its name of *Pithecanthropus Erectus*—

¹ Dubois, *4th Internat. Congress Zoology*, 1898, p. 78; *Journal Anat. and Physiol.* 1899, vol. xxxiii. p. 273.

the ape-man who walked erect. But does this mean that he is the "Missing Link?" In *Pithecanthropus* we find a being who is human in stature, gait, and, in fact, in every respect save his brain. All the structural characters of this interesting specimen from Java are exactly what we should expect to find in the transitional stage between man and ape. Does *Pithecanthropus*, then, represent the long sought missing link in the evolution of the human organism?

Before answering this question there are two facts that have to be considered: (1) What exactly is the antiquity of the Java remains? (2) What relation does *Pithecanthropus* bear to Palaeolithic man, and the embryonic history of the human body? There is also, of course, the momentous question as to whether the bones belong to the same skeleton, for if two skeletons are represented, one may be human and the other anthropoid. It seems, however, highly probable that the bones belong to the same species, and, as no trace of a burial is discoverable, it is reasonable to assume that they are parts of the same individual. If we do not admit this, we must suppose that the teeth and femur belong to a human being possessed of simian features, while the calvaria is part of an anthropoid skull. Again, if two skeletons are represented it is curious that no further remains should have been discovered in the immediate

neighbourhood. We may therefore decide this latter point in favour of Prof. Dubois, who assigned the bones to one and the same creature.

To pass on to the matter of the date of the remains, we find ourselves faced with a more difficult problem. It has already been shown that Prof. Dubois claims Pliocene antiquity for *Pithecanthropus*. This conclusion has been contested by several authorities, who place the Solo deposits in the Pleistocene. To settle the age of the strata more definitely, and to re-investigate the site, Frau Lenore Selenka and Prof. Max Blanckenhorn arranged an expedition in 1906 to visit Trinil, with the result that a number of fossil forms were brought to light. Again expert opinion is divided. Dr. Stemme regards the fauna as late Pliocene, while others refer it to the older Pleistocene. Prof. Keith is of the opinion that the mammalian remains of the fossiliferous bed at Trinil resembles that of the Cromer forest beds, which oscillate in the geological scale on either side of the border-line between the Pliocene and Pleistocene.¹ This seems to be the most probable solution to the problem, since they include such forms as Elephant, *Stagodon*, Rhinoceros, Hyena, Hippopotamus, *Babalus* (identical with a Siwalik Pliocene form), Deer, etc. Prof. Klaatsch has recently explored the region in search of flint

¹ *The Antiquity of Man*, p. 269.

implements made by *Pithecanthropus*, but without success.

The relation of *Pithecanthropus* to the ancient types of Palaeolithic man is complicated by the recent discovery of several types of ancient humanity of an entirely different nature. Granting that the Trinil ape-man lived at the end of the Pliocene, it is inconceivable that the rudimentary brain represented by his calvaria should have developed into that of the later type, in the interval between the Pliocene and the mid Pleistocene. This difficulty is greatly enhanced by the discovery made a few years ago at *Piltdown* in Sussex. The site of this epoch-making discovery is situated in a shady avenue leading to Barkham Manor, a short distance from a beautiful piece of Sussex moorland—*Piltdown Common*—eight miles north of Lewes, and three miles from Uckfield. Near the Manor, between the roadway and the hedge, there is a small gravel-pit on the right hand side of the avenue. A less likely spot for a momentous discovery it would be difficult to imagine. Even the trained eye of the expert would not expect to find beneath this shallow stratum of river-gravel, which is less than four feet in depth at this point, human remains calculated to materially advance our knowledge of primeval man. The gravel is stratified and was evidently laid down by running water, judging from the water-worn appearance

of some of the flints, although the Ouse is now nearly a mile away to the north-west. In the lowest layer, which is only six inches in thickness, Charles Dawson of Lewes procured an unusually thick human parietal bone. A few years later (1911), on again visiting the spot, he picked up another piece of the frontal region of the same skull, including a portion of the left superciliary ridge. On examination of his finds he was impressed by the resemblance the fragments bore to the Heidelberg jaw,¹ and consequently took them to Dr. Smith Woodward at the Natural History Museum in London. This led to further excavations, and the discovery in the spring of 1912 of the greater part of what is perhaps the most important prehistoric skull yet unearthed.²

The remains consist of a large part of the left side of the skull, and a portion of the lower jaw. In the same deposit a number of eoliths were found (bearing a striking resemblance to the eoliths discovered by Mr. Benjamin Harrison in the red gravels at Ightham in Kent), together with some unworn palaeolithic implements of the Chellean type. In the summer of 1914 Mr. Dawson found in the upper layer of gravel a fossilised piece of an elephant's femur, showing evidence of having been worked into shape by human hands. If this is really a bone implement, then the industry that

¹See p. 43. ²*Quarterly Jour. Geol. Soc.* March 1913, vol. xix. p. 117.

has hitherto been confined to Mousterian or post-Mousterian times must be carried back to the pre-Chellean era !

A very interesting collection of animal remains, such as the *mastodon arvernensis*, a Pliocene elephant (*elephas meridionalis*), two teeth of the hippopotamus, horse, beaver, and a large red deer, were found near the skull. The two Pliocene beasts—*elephas meridionalis*, and the mastodon—were, like the eoliths, in a water-worn condition, and prove that the gravel was partly composed of the remains of some Pliocene deposit, probably a higher and older gravel of the river Ouse. The skull, however, appears to be contemporaneous with the palaeoliths rather than the eoliths and the Pliocene fauna, as the bones show no signs of being waterworn. If this assumption is correct, the age of Piltdown man—*Eoanthropus Dawsoni* as he is called—should be fixed as early Pleistocene. At the same time it should be pointed out that Mr. Reid Moir, the well-known expert on early flints, assigns the “ more Palaeolithic-looking specimens ” to a period preceding the “ Chelles ” phase. In this case the Piltdown skull belongs to an intermediate period between the Pliocene eoliths and the early Pleistocene palaeoliths. In fact Prof. Keith would go so far as to definitely assign *Eoanthropus* to the Pliocene.¹

¹ *Antiquity of Man*, pp. 306-315.

It is impossible here to review all the evidence regarding the antiquity of this important discovery. Sufficient, however, has been said to show that the Piltdown remains takes us very far back, into at least the earliest phases of the Pleistocene, and therefore not far removed, in point of time, from *Pithecanthropus*. But the most cursory glance at a cast of these two early types of humanity—granting that the latter is human—will show at once the enormous difference between their physical features. *Pithecanthropus* is, as we have seen, a creature with an extremely low receding forehead, prominent brow-ridges, a small cranial capacity, and other ape-like features. *Eoanthropus*, on the other hand, has a cranial capacity of about 1397 c.c.,¹ a very high forehead (higher than in the Neanderthal race), feebly developed brow-ridges, thus in some respects resembling modern man. The shape of the upper part of the skull is thoroughly human, and the low cranial capacity is partly explained, if the supposition is correct, that the Piltdown skeleton is that of a woman.

The lower jaw is perhaps of greater significance than any other feature of the skull. So nearly does it resemble the mandible of a young chim-

¹ Smith Woodward's latest estimate is nearly 1300 c.c., Keith suggests as much as 1397 c.c., if the two sides of the skull were properly restored, but Elliot Smith's rearrangement would reduce the capacity to 1100 c.c.

panzee that Dr. Smith Woodward has taken the jaw of that ape as a model for his reconstruction. He has given the creature ape-like front teeth, and a correspondingly elongated upper jaw, thus making the face very prognathous (protruding). The jaw, like several other very early mandibles, is chinless, and therefore the front teeth must have been very large, though it is possible that the anterior curve of the jaw passed more sharply upwards than in Dr. Woodward's cast, and the teeth are in consequence smaller and more human. This conjecture is supported by the two molars that have been preserved, both of which are perfectly human. Jutting in from the jaw where it is broken off there is a small piece of bone which makes the extent of the symphysis (bony union of the two sides of the jaw) very great. This again is an ape-like feature.¹ Enough has been said to show that *Eoanthropus* represents a new genus combining a human cranium with an ape's jaw, and therefore, that Dr. Woodward is justified in placing it in a class by itself with a distinctive name.

Before discussing the relationship of *Pithecanthropus* to the Piltdown man and the rest of humanity, the other discoveries that have thrown light upon the origin and antiquity of man must be briefly reviewed.

¹ Gerrit S. Miller in *Bureau American Ethnol.* (Nov. 24, 1915) refers the mandible to an adult chimpanzee.

Eighteen years separated the discovery of Pithecanthropus from that of the second great find which takes man back to late Pliocene or early Pleistocene times. In 1907 an immense and extraordinary human jaw was found by workmen in a sandpit near the village of Mauer, about ten kilometres south-east of Heidelberg. The mandible was buried about eighty feet below the surface in a layer of sand and shingle, from which a number of extinct animals have been extracted. The fauna includes *Elephas antiquus*, *Rhinoceros etruscus*, two species of bear (*Ursus arvernensis* and *Ursus deningeri*); a cave lion, wolf, boar (*Sus scrofa priscus*), deer (*Cervus patifrons*), red deer, roe deer, bison, beaver, horse (*Equus stenonsis*), and shells similar to those of the Cromer forest bed. It will be seen that there is, so far as the evidence goes, a very close similarity in the animals known to the Heidelberg man and Eoanthropus. *Elephas antiquus*, *Rhinoceros etruscus*, and the two bears, suggest, if not Pliocene, at least one of the early genial episodes of the Pleistocene.

The jaw itself presents several remarkable features. The dentition is absolutely human, the teeth being almost absurdly small in comparison with the enormous strength of the rest of the mandible. Notwithstanding the small teeth, there is complete absence of any prominence at the chin. The chin of modern man is the result of the con-

traction of the upper surface of the jaw, owing to less room being required for the teeth. It is therefore surprising to find such small teeth in what is admittedly the largest human jaw yet discovered. In fact the dentition of the Heidelberg jaw is in some respects (excluding the grinding molars, which are enormous) less primitive than that of the Australian of to-day, though, of course, exceeding that of any modern Europeans. It is thus clearly impossible to assign the possessor of this mandible to the anthropoid variety of Primates. On the other hand, its huge proportions, and the slight depression replacing the sigmoid notch (the upper margin of the ascending ramus) testify to its primitive character. Prof. Keith thinks that the jaw is too massive to fit the skull of *Pithecanthropus*, though he is prepared to admit a comparison between the teeth of the two creatures. Be this as it may, *Homo Heidelbergensis* represents a human genus far removed from the later types of Palaeolithic man, and at the same time a definitely human creature.

To pass from the remains that possess good claims to occupy an intermediate position between mankind and the anthropoid apes, we come to the human fossils in mid-Pleistocene deposits. The first discovery of remains of Palaeolithic man to receive serious attention was made in 1856, when some workmen brought to light a human skeleton

in the Feldhofen Cave, at the entrance to a small ravine called Neanderthal, on the right bank of the river Düssel, in Rhenish Prussia. It lay embedded in a hard loam, and unfortunately was badly damaged before it was extricated. However, Dr. Fuhlrott, a physician who happened to be interested in cave exploration, was near at hand, and superintended the excavation, with the result that the cranium, the thigh bones, the right and left humerus, fragments of the pelvis, shoulder-blade, collar-bone, and of the ribs, were preserved, and are now in the Rheinische-Antiquitäts' Museum at Bonn. When the remains were first exhibited, doubts were freely expressed as to their human character. Virchow pronounced his opinion that the cranium was diseased; Broca declared them to be normal; and Dr. Shaaflhausen, an expert anatomist, who in 1858 published an excellent account of the bones, in which he described them as the "most ancient memorial of the early inhabitants of Europe."¹ Huxley recognised the skull as human—"the most brutal of all known human skulls"—though he always maintained that Neanderthal man was merely an extreme variant of modern man, and not a separate type—*Homo Neanderthalensis*.²

The most striking features of the skull are the

¹ Cf. G. Busk, *Natural Hist. Review*, 1861, p. 283.

² *Man's Place in Nature*.

thickness of the bones, the low retreating forehead, the heavy brow-ridges, and the widening of the occipital region. The cranial capacity is estimated at 1230 c.c. The bones and teeth of the cave-bear, the cave hyena, *Rhinoceros tichorhinus*, and *Elephas primigenius*, were found in a similar cave in the same stratum, thus suggesting that the Neanderthal man lived in company with Pleistocene fauna. This conclusion the world in the middle of the nineteenth century was by no means ready to admit. All kinds of interpretations were put upon the remains. It was impossible to argue that the narrow-headed individual with the low retreating forehead and projecting brow-ridges, embedded in a cave eroded in Devonian limestone in which such fauna as the mammoth also occurred, was only 4000 years old. Since the chronology of Archbishop Usher could not err, the Neanderthal skeleton could only be that of an idiot, of an usual species of ape, or of a diseased person.

So long as this skeleton was the only one of its kind, and an imperfect one at that, its testimony was unconvincing. Even among scientists, who had no creation theory to maintain, there was, as we have seen, a sharp divergence of opinion as to whether the relic should be ascribed to an extinct race, or whether it belonged to a degenerate and diseased individual of the modern type of man. In the sixty years that has elapsed since

the first discovery many other similar remains have been brought to light, which prove the existence of a definite Neanderthal race widely spread over Europe in the earlier part of the Pleistocene epoch.

While the scientific world was thinking hard, its meditations were disturbed by the discovery, in 1866, of a woman's jaw in the Trou de Naulette—a limestone cave in the banks of the river Lesse in Belgium. Only the region of the chin and the left part of the mandible remained. All the teeth had dropped from their sockets after death, but the sockets show that they were of the Neanderthal type. The conclusion that the Naulette mandible belongs to the same species as the skeleton from the Neander valley is also supported by the absence of chin and its massive proportions, together with the geological evidence furnished by the site in which it was found. The jaw lay fourteen feet below the surface of the ground, and in the same stratum remains of mammoth, woolly rhinoceros, bear and reindeer occurred, together with flint implements of the Mousterian type.¹

A skull of a similar nature had been found in Forbes Quarry, Gibraltar, in 1848; but, as this discovery took place before the epoch-making discovery at Neanderthal, it attracted little attention, till in 1862 Mr. George Busk brought the

¹ See p. 73.

skull to England, and subsequently presented it to the Museum of the Royal College of Surgeons in Lincoln's Inn Fields, London. In 1864 he published a description of the skull, and a few years later Broca described its osteological characters. But it was not until 1907, when Prof. Sollas took the matter up, that a detailed and critical account of the remains was put forth. Additional information on the subject has been given by Dr. Duckworth and Dr. Sera—the former, having explored the site in 1910, found Mousterian flints in an adjoining cave. The most important feature of the specimen consists in the fact that the bones of the face and of the skull have remained intact. The mandible and upper molars are wanting, as is a part from the vault of the skull. The upper jaw does not project, therefore the face is not prognathous. The cranial capacity is estimated by Keith at 1100 c.c.,¹ and is therefore less than the typical Neanderthal type. A striking feature of the skull is the enormous size of the orbital and nasal cavities. Keith regards the Gibraltar man as a more primitive type than the true Neanderthal race; in fact, it appears to him to bridge the gulf between *Pithecanthropus* and the typical Neanderthal man.²

The ball having been set rolling, it moved rapidly.

¹ Sollas gives the capacity as 1260 c.c., and Boule 1296 c.c.

² *Ancient Types of Man*, p. 121 f. Cf. *Antiquity of Man*, p. 135.

The caves at Le Moustier, Chapelle-aux-Saints, La Ferrassie, in France ; Spy, in Belgium ; St. Brélade, in Jersey, revealed traces of their ancient inhabitants, so that at the present time we have more than twenty examples of the Neanderthal type of Palaeolithic man. Space does not permit of our describing these various discoveries. Suffice it to say that while presenting certain variations, the Neanderthals were a short, sturdily built race, standing about 5 feet 3 inches. They had projecting brow-ridges, massive jaws and teeth, prognathous faces, and chinless mandibles. Their bodies were very probably hairy. They walked upright, and protected themselves from the icy climate of the mid-Pleistocene period by clothing themselves in skins, living in caves and making fires. A minute examination of their bones reveals certain resemblances to the white, Mongol and Australian races of modern times, and also a few ape-like characters which are not found in any of the present day varieties of man.

During the last inter-glacial phase the Neanderthal race seems to have become extinct in Europe, but some time before its disappearance a type of man with different anatomical features arrived, and succeeded in establishing himself in France and elsewhere. Until recently it was supposed that there was but one race in Europe, and that this evolved passing through the stages of culture

known as the Mousterian, Solutréan, and Magdalenian. But this hypothesis has now been abandoned by most archaeologists. A theory advanced by M. l'Abbé Breuil suggests that at the end of the Mousterian phase a new race of men, the Aurignacians, entered Europe by way of the land bridge connecting Tunis with Sicily and Italy traversed by the fauna in the previous age. Thence these people proceeded to France with the hippopotamus, *elephas antiquus* and *rhinoceros merckii*, and established themselves in the Pyrenees and the valley of the Vézère, where they came into contact with the Neanderthal race. Further, it has been supposed that other races—of a negroid character—subsequently entered France and Italy, having affinities with the Pygmies. Before passing judgment on this hypothesis we must examine the evidence upon which it is based.

In excavating a railway cutting in the valley of the Vézère, near Les Eyzies in the Dordogne, a rock shelter (*Cro-Magnon*) was found in 1868, containing five almost entire skeletons. These differ from the Neanderthal type in exhibiting certain marked resemblances to modern man. Their cephalic index—*i.e.* the ratio of the breadth of a skull to its length, expressed as a percentage—is about 73.6 and the cranial capacity 1590 c.c. The teeth are small, and the average height of the skeletons about 5 feet 11½ inches. The strata of the

lower floor of the cave in the limestone cliffs showed traces of hearths and the culture of the Aurignacian period. This type of humanity is characterised by massive skulls with large cranial capacities, but slightly developed brow-ridges, well-marked chins, prominent cheek bones, long slender limbs, with short humeri or upper arm bones. Examples of the Cro-Magnon race have been discovered at Paviland (Wales), Grottes des Enfants (Mentone), Engis, Chancelade, Kent's Cavern, and possibly at Gough's Cave, Cheddar.¹

In 1909 a complete skeleton belonging to a lower type of Palaeolithic man was discovered by the Swiss archaeologist, M. O. Hauser, near Combe Capelle (in Périgord, France). Near the skeleton a number of flint implements of the Aurignacian type were found, together with a quantity of pierced snails' shells, which had evidently been used as a necklace. The skull presents a marked contrast to the Neanderthal type. In place of the low, flat cranium it has a high, well-developed forehead. The superorbital ridges are less prominent, while the jaw shows little sign of prognathism. The chin has been described as a transition between a negative and a positive chin. The absence of a definite chin, however, shows that the man was of an early type, much less advanced than his Cro-Magnon successor. The Combe Capelle skeleton

¹ Cf. *J.A.I.* vol. xliv. 1914, pp. 241 ff.

has been associated with several others by Prof. Klaatsch. A very similar skull has been found at Galley Hill, near Northfleet, in Kent. It was discovered in 1888 in terrace gravels, although it was not until 1895 that it was described. The matter was then put before the Geological Society of London by Mr. E. T. Newton, F.R.S., but much difference of opinion was expressed by authorities ; some contended that the remains were those of a man living in the river-drift period ; others that they represented a late Palaeolithic or Neolithic interment. Prof. Keith describes the Galley Hill man as a type of a new race, which is still represented in the modern population of Britain, although it was originally evolved long before the valley system of England had taken its present configuration.¹ M. Rutot, in 1903, assigned the remains to an early pre-palaeolithic culture period named by him the Mafflian, a conclusion he modified in 1909, bringing the skeleton down to the Strépyan epoch.

The Galley Hill remains were found in a gravel bed, 10 feet thick and 90 feet above the level of the valley. The skeleton was at a depth of eight feet from the surface, but unfortunately no associated fauna or implements have been found. However, the mammalian remains of the " high-level terrace " in the immediate vicinity include such early species

¹ *Antiquity of Man*, pp. 178-193.

as *Elephas antiquus*, various forms of rhinoceros, ox, *trogontherium*, etc., and Palaeolithic implements of the Chellean type are said to have been obtained from the same gravel. The chief difficulty lies in the fact that the spot at which the remains were discovered had been quarried away by the time the matter was scientifically investigated, and, therefore, it is impossible to definitely prove that the bones were in undisturbed strata. The skeleton itself is so distorted that measurements tend to become misleading. It appears to have belonged to a man of short stature, resembling in some respects modern human beings. The skull is dolichocephalic (long headed), with well marked superciliary ridges, a prominent glabella, and but a slightly developed chin. The large size of the last molar and of the head of the femur was thought by Dr. Garson to be peculiar. The cephalic index is 64, and the thickness of the skull is 12 millimetres. Through the courtesy of Prof. Keith, the present writer recently carefully examined the cast of the skull at the Museum of the Royal College of Surgeons, and came to the conclusion that the anatomical features of the specimen are primitive but not Neanderthaloid. The thickness of the cranial walls, the extreme length of the cephalic index, the strong bony ridges over the eyebrows, and the dimensions of the last molar, are all primitive characters, but at the same time it does not present

the crude and bestial appearance of *Homo Neanderthalensis*.

In 1911 Mr. Reid Moir discovered at Ipswich a human skeleton in what is thought to be pre-boulder clay.¹ The fact that the remains were only $4\frac{1}{2}$ feet below the surface makes a later interment a highly probable explanation of the presence of the skeleton in the stratum. If, however, it can be proved that the site is really undisturbed, the discovery is of the utmost importance, as it constitutes an example of very early man. An examination of the actual remains do not suggest so great antiquity. The Neanderthaloid characters are absent, and the cranial capacity is estimated at 1430 c.c. True, the tibia was without the sharp, bony crest—a simian feature—yet this alone cannot be taken as of much value. With this passing reference, we deem it expedient to defer judgment on the archaeological value of the Ipswich skeleton till more convincing evidence is forthcoming.²

Before concluding this survey of ancient human remains, mention should be made of an interesting discovery at Grotte des Enfants, near Mentone, France. This cave derives its name from the fact that in the upper strata of the floor the skeletons

¹ *J.A.I.* 1912, vol. xii. p. 351.

² Mr. Reid Moir has lately published in *Nature* a letter in which he gives up the claim to a pre-boulder clay age to the Ipswich man.

of two children were found. These, however, do not concern us now. Further excavations, carried out under the patronage of the Prince of Monaco, revealed, in another stratum, two human skeletons (those of an aged woman and a young man), which show a certain resemblance to a negroid type. The late Prof. Gaudry, after examining the jaw of the male skeleton, pointed out the similarity of the mandible to that of the natives of Australia—large teeth, feeble chin development, and degree of prognathism.¹ Dr. Verneau saw in the same remains African negroid affinities, a conclusion supported by the long and slender lower limbs and forearms. Adding to these latter features the prominent molars, markedly prognathous jaws and sloping teeth, there seems to be good reason for assigning the remains to a distinct type. It has been called after the family name of the Prince of Monaco, the *Grimaldi Race*.

From the foregoing descriptions, it follows that the remains of primeval man may be divided into three main groups. In the first place come the examples from the late Pliocene or early Pleistocene epoch — *Pithecanthropus*, *Eoanthropus*, *Homo Heidelbergensis*, and the disputed Galley Hill man. In the second category are instances of the definitely human Neanderthal type. These are often called *Homo Primigenius*. The third division consists

¹ *L'Anthropologie*, 1903.

of three varieties of *Homo recens*—the Aurignacian, Cro-Magnon, and Grimaldi types.

We are now in a position to discuss the relationship, or absence of relationship, of these various species. Are we to regard the first group as "missing links," since they all appear to be coeval in point of time, and represent a very early type of man having definite simian features? Or do the remains found at Piltdown belong to one race, those in the Mauer sands to another, and the semi-human creature in the Trinil beds to a third species? It would be easy to suppose that the Heidelberg man and Eoanthropus were preceded by still more primitive ancestral forms, of which Pithecanthropus is an example. But the difficulties in the way of accepting this simple explanation of an extremely complex problem have already been pointed out. And only recently the question has been further complicated, for about two miles from Trinil a definitely human, though primitive, tooth has been discovered, which is thought to be older than Pithecanthropus.¹

Prof. Klaatsch puts forth an ingenious but highly speculative supposition when he assumes the existence of a quantity of propithecantropi (pre-ape-men or common progenitors of apes and men) which broke up into mighty hordes dispersing in all directions. From these hordes the ancestors

¹ Blanckenhorn, *Zeitschrift für Ethnologie*, Band 42. 5. 337.

of the various anthropoids sprang. Thus, one concourse of pre-men wandered into Asia, and from them originated the oranges, whilst the main horde, ever evolving, came into Europe with the glacial fauna and produced the Aurignacian race. Had the Piltdown man been discovered when Klaatsch drew up his scheme, he would probably have placed *Eoanthropus* as the forerunner of the Aurignacians. *Pithecanthropus* is explained, on this hypothesis, as a propithecantropi who has failed to attain to definite humanity. The more primitive and gorilla-like Neanderthal type is introduced into Egypt as an invader from Africa.¹ Keith takes violent exception to this theory.² No doubt the weakness lies in attributing to the ancestors of the orang-utan so close an association to any human ancestral forms. Keith adopts the view that the Neanderthal type is ancestral to the modern types, the alteration in physical features being largely due to the alteration in the pituitary angle (the pit or fossa situated on the upper-intracranial-aspect of the basal axis), consequent on a change in the function of the pituitary gland.³ The fact that some of the Australians actually exemplify this process lends weight to the suggestion, but, at the same time, it should be remembered that Dr. Sera, after careful examina-

¹ *Prehistorische Zeitschrift*, i.

² *Nature*, Feb. 16, 1911 ; Dec. 15, 1910.

³ *Antiquity of Man*, p. 156.

tion of the Gibraltar skull, in which the pituitary angle is very open (and therefore tends to pitch the face forwards), concludes that the change in the pituitary gland may be due to environment and not to a condition of evolution.¹

If Dr. Sera can prove definitely that the degree of platycephalism—the downward flattening of the cranial arc—in the Neanderthal skull is the result of environment, the theory of *Homo Neanderthalensis* as a distinct type of primeval man will have to be abandoned, and the Gibraltar man regarded as presenting the essential features of *Homo primigenius* before he was affected by glacial environment, the result of which conditions is exemplified by the Neanderthal species. It is unfortunate for Dr. Sera's argument that the Eskimos, who to-day represent an arctic race, display anything but platycephalic features. It is also difficult to reconcile Sera's view with the skull formation of *Homo recens* (Aurignacian and Cro-Magnon) who, in the Aurignacian period, lived side by side with glacial fauna, and yet had a well arched cranium.

In the present state of our knowledge it is impossible to speak with any degree of precision on the exact mode of development of the races and types of mankind. It seems highly probable that the Aurignacians were not evolved from the Neanderthal race ; at least not in Europe. Kramberger,

¹ *Archiv. Antropologia*, 1909, vol. xix. p. 5.

Schwalbe and Keith consider that the Neanderthal people represent a distinct species of human being. In this case it is justifiable to divide humanity into *Homo primigenius* and *Homo recens* (or *sapiens*). According to Schwalbe's view, the following classification would be allowable :

Neanderthal	$\left\{ \begin{array}{l} \textit{Homo} \\ \textit{Primi-} \\ \textit{genius.} \end{array} \right.$	Brüx ¹	$\left. \begin{array}{l} \textit{Homo} \\ \textit{recens.} \end{array} \right\}$
Spy		Galley Hill	
Krapina		Cro-Magnon	
Gibraltar		Australian European	

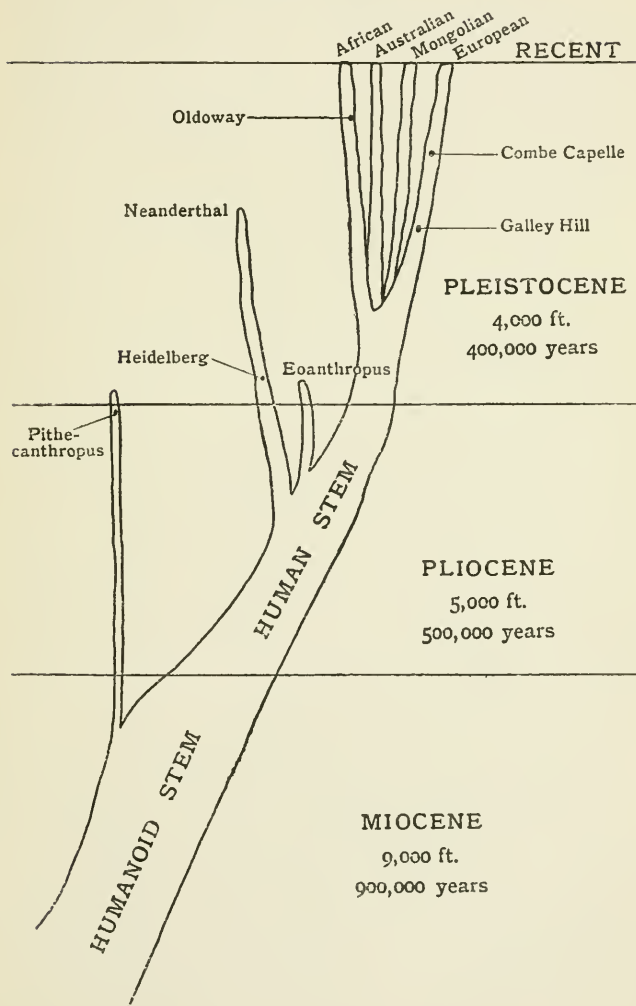
The discovery of a human form like *Eoanthropus* and the Galley Hill man, wherein the features of modern man are represented, at the close of the Pliocene or the beginning of the Pleistocene age, is against any theory of a continuous gradual development from *Pithecanthropus* through *Homo Heidelbergensis* and *Homo Neanderthalensis* to the later types. Even if the Galley Hill skeleton be assigned to a more recent date, *Eoanthropus* has to be considered. Does he represent a separate human genus which became extinct and left no progeny, or does he constitute a stage of evolution reached by man at the commencement of the Pleistocene period ? These are indeed momentous questions

¹ A skull found at Brüx (Moravia) is suggested as the connecting link of the two species. Cf. Keith's genealogical tree of man's ancestry reproduced on page 61.

which have yet to be satisfactorily answered. If man of the Galley Hill-Piltdown type preceded, in point of time, man of the lower Neanderthal order, the ancestry of the former must be sought in the early Pliocene, or even in the Miocene or Oligocene, contemporary with eoliths. In this case *Pithecanthropus* and the Neanderthal race must be regarded as degenerate forms of humanity, which in course of time became extinct. Some authorities have tried to prove that the Neanderthal-Spy race survived the Palaeolithic age as the dolichocephalic Europeans; others have attempted to show that the native Australians and the Eskimos are the direct successors of Neanderthal man.

We, however, incline to the view (if we might venture to put forth a tentative suggestion, while awaiting further evidence) that man evolved from a common precursor early in the Pliocene, leaving behind him those pre-chellean implements which show undoubted signs of human workmanship. The discovery of *Propithecus* in the Oligocene strata of the Egyptian desert, having almost human dentition, slightly developed canines, perpendicular incisors and premolars, is a step towards the finding of the hypothetical common ancestor. It is quite within the bounds of probability that further research in the neighbourhood of the Siwalik hills in northern India will reveal one more of the Tertiary forerunners of the apes and man.

GENEALOGICAL TREE OF MAN'S ANCESTRY, AFTER KEITH



Palaeopithecus may be cited as an example from the Pliocene of the Siwalik hills, of a generalized type of extinct ape, related to the chimpanzee, the gorilla, and the gibbon, with upper premolars resembling those of man. Primitive representatives of the four existing types of anthropoids have been discovered in southern India.

It therefore seems highly probable that in the Pliocene period there existed a type of man sufficiently high to serve as a common ancestor for the Neanderthal and the Eoanthropus-Galley Hill-Cro Magnon species of the human organism. In our opinion *Pithecanthropus* does not represent either a precursor or an early phase of Neanderthal man, but a development on lines of its own. It is clearly impossible that the Piltdown or even the Gibraltar man could have evolved from the Trinil ape man, and there is good reason to believe that the Neanderthal type does not represent a development of *Pithecanthropus*. It seems more probable that the Heidelberg mandible constitutes a part of the remains of an early Neanderthal species living at the beginning of the Pleistocene, and perhaps contemporary with *Eoanthropus*. Towards the end of the Ice Age the Neanderthal type became extinct, while the Piltdown-Galley Hill race survived as Aurignacian and Cro-Magnon man. It is possible that a certain amount of fusion between the types in Europe in the later Pleistocene resulted

in the variation from the Cro-Magnon race presented by the remains found at Grimaldi.

At the close of the Mousterian culture phase new races seem to have entered Europe—perhaps bearing a resemblance to Eoanthropus on the one hand, and to a negroid variety on the other—with them came the warm-loving fauna, such as the horse, bison, cave lion, and cave hyena, and an advance in culture. As the dry and cold climate of the later part of the ancient loess reappeared, a new race—the Magdalenians—migrated into Europe with the reindeer, producing weapons made of bone and horn and decorating their dwellings with wonderful pictures and designs. By the close of the Palaeolithic period the ice had retreated towards the pole, thereby affording ample space for racial expansion. Thus is explained the great movements of peoples which characterised the transition from the Old to the New Stone Age. That a new and higher type of man entered Europe with the Neolithic period is highly improbable, since, as has been shown by Keith, the physical features of Neolithic man bear a remarkable similarity to those of the Cro-Magnon species.¹ It was not until long after the close of the Palaeolithic Age that the characteristic dolichocephalic skull is found in company with a round or brachycephalic type of cranium in the archaeological

¹ *Antiquity of Man*, pp. 1-45.

remains of Central and Southern Europe, although some have maintained that brachycephaly is of extremely ancient date, going back to the mid-Pleistocene.

Amongst the Neanderthals, one skull, that of Krapina, is distinctly round-headed, having a cephalic index of 85.5; while the much discussed skulls of Furfooz, Grenelle, and La Trenchère, are also brachycephalic. The last mentioned skull combines a prognathous jaw and prominent nasal bones with a cephalic index of 84.32. M. Breuil suggests an immigration from the east in the Solutréan culture-phase to account for the finds characteristic of this epoch in East Central Europe. On this hypothesis the above-mentioned brachycephals might be regarded as the forerunners of the round-headed Alpines who invaded the continent in Neolithic times. It is reasonable to suppose that the makers of the famous laurel leaf flints¹ followed the reindeer eastwards to the Steppes and Asia before the Magdalenian invasion began, and, after mingling with the brachycephals of Asia, returned to the Central highlands in later times. But since no human remains can with certainty be attributed to the Solutréan, the theory of a Palaeolithic brachycephalic race must be regarded as at present unproven.

¹ See page 75.

CHAPTER II.

THE CULTURE OF PRIMEVAL MAN.

PROF. SOLLAS is undoubtedly correct in describing man in the earliest stages of the Palaeolithic period as an "Ancient Hunter." A hunter he must have been, not essentially by choice but from necessity. His life consisted in wandering over the fertile country, in the warm inter-glacial phases, chasing wild beasts on the densely forested banks of the immense rivers, collecting birds' eggs, grubs, wild fruits and berries. *Homo primigenius* was probably at first mainly a vegetarian, till, through the deficiency of the food supply caused by the advancing glacial period, he was obliged to acquire flesh-eating propensities, and thus added animal food to his original diet. But even so, his earliest attempts at "hunting" would most likely be confined to frogs, and the small rodents, till, as his implements, weapons, and skill became more developed, he became a hunter of big animals.

It can be pretty safely assumed, judging from the teeth of the earliest skulls, and from the lack of implements, that prior to the Chellean Age primeval man was chiefly a vegetarian, except for such flesh as was furnished by small animals. Therefore hunting, like the other arts of life, must be regarded as a product of evolution.

It was probably not until the Neolithic period that the great revolution in the mode of life led by our ancestors took place, when the hunter became the shepherd and farmer, settling down to a less nomadic existence. In the cave of Mas d'Azil little heaps of burnt wheat have been found, together with stones of plums and cherries, and the shells of nuts. Thus, some anthropologists have been led to think that agriculture was first practised at the extreme end of the Palaeolithic Age. Be this as it may, the epoch-making discovery preceded by a long interval the discovery of metals, although a complete mastery over stone had been acquired at this time.

The Stone Age as a whole is not, however, divided into a hunting and an agricultural stage, but according to the nature of its weapons into the ancient or *Palaeolithic Period*, characterised by flaked implements; and the new or *Neolithic Period*, characterised by ground and polished flints.¹

¹ Lubbock, *Prehistoric Times*, p. 60.

The former is subdivided thus :

Reutelian	$\left\{ \begin{array}{l} \text{Pre-} \\ \text{Palaeo-} \\ \text{lithic or} \\ \text{Eolithic} \\ \text{stage.} \end{array} \right.$	Chellean	$\left\{ \begin{array}{l} \text{Lower} \\ \text{Palaeo-} \\ \text{lithic.} \end{array} \right.$	Aurignacian	$\left\{ \begin{array}{l} \text{Upper} \\ \text{Palaeo-} \\ \text{lithic.} \end{array} \right.$
Mafflian		Acheulean		Solutréan	
Mesvinian		Mousterian		Magdalenian	
Strépyan				Azilian	

These so-called epochs are merely landmarks representing the successive phases of culture in the early Stone Age. By assuming the erect attitude man became differentiated from all other animals by being free to pick up and hold or throw stones, etc., an accomplishment of the greatest value in the daily quest for food. With a piece of flint he could pound up his roots, berries, etc., scrape with a similar weapon the skins of the animals he had killed, dig holes in the ground for storehouses, or increase the warmth of his hut, and in later times could hollow out trees to make canoes. In short, flint, or, perhaps, a bone implement was used for everything for which a tool could be used. At first a stone haphazardly picked up no doubt served for many purposes. Monkeys have been observed to use stones for cracking nuts, etc., and therefore there is no definitely human mental activity necessary in the performance of such an act. But as soon as man appeared, it was not long before he discovered that a shaped implement was far more practical than an unshaped one, and thus he began flaking his tools to the desired

proportions. The earliest tools must have been made by flaking or hammering a piece of gravel with another stone to improve its shape and adapt it for use. Such roughly hewn pebbles or nodules and naturally broken stones showing work, with thick ochreous patina, have been found in the plateau gravels of Kent, Belgium, etc., and have been called *coliths* (*ῥίως*, dawn, *λίθος*, stone)—a name proposed by Mr. J. Allen Brown, and now almost universally adopted by archaeologists to describe all alleged artefacts belonging to an age earlier than the Palaeolithic. Such nodules have been subdivided by M. Rutot into three stages—Reutelian, Mafflian, and Mesvinian.¹

The controversy as to whether they were or were not the work of man is still unsettled. Sir Joseph Prestwich, Sir E. Ray Lankester, Mr. Benjamin Harrison, Mr. Reid Moir, and Dr. Blackmore in England, and M. Alfred Rutot in Belgium, are among the chief advocates of the human origin of the flints. The first investigator in this field was the Abbé Bourgeois, who discovered in 1867 a number of flints in upper Oligocene strata which, he thought, showed signs of intelligent design. This opinion was shared by several authorities, but repudiated by others. The question bristles with difficulties. On the one hand everyone feels that the precision of workmanship set forth in the

¹ *J.A.I.* 1905, xxxv. pp. 337-364.

earliest forms of the Palaeolithic implements (the Chellean) presuppose an earlier stage when rougher implements prepared the way for the most finished types. On the other hand, it has been shown by Mr. Hazzledene Warren and others that eolithic forms are constantly being produced by cart wheels breaking up newly mended roads, the concussion of adjacent pebbles, the effects of weather, and other natural processes. Moreover, no other human remains have been found from the lower Tertiary strata. There are forms, however, that have been discovered in the upper Miocene which shows signs of regular chipping only explicable when regarded as the result of human workmanship. This conclusion is supported by the fact that implements of a similar kind (hollow scrapers) were used by the Tasmanians before they were ruthlessly exterminated by English Colonists between 1825 and 1877. It should also be remembered that the argument that eoliths carry man's existence too far back is at best merely of the negative order, and for this reason it must be discounted to some extent. When man first used stones as implements he undoubtedly employed natural forms with sharp edges, and his first attempts at shaping must have been very erratic. It is therefore clearly impossible to say if a given flint owes its form to natural or accidental causes, such as weathering, movements of deposits, ice,

crushing in landslips, etc., or if it was chipped by man.

When, however, definite forms are produced like those found by Mr. Reid Moir in the detritus-bed below the decalcified red crag (middle Pliocene), in Messrs. Bolton and Loughlin's brick pit near Ipswich, and elsewhere in the district, there can be little doubt of human workmanship. The implements in question are about four or five inches long, slightly compressed from side to side, with a curved point like the beak of an eagle—hence they have been called the “rostro-carinate” type.¹ These crag implements resemble in many particulars the ordinary Strépyan “hand-wedge”—the most ancient palaeoliths previously known. The presence of ice scratches on rostro-carinate implements shows that a glacial climate prevailed when the red crag was formed, and therefore they belong to the middle deposits of the Pliocene period, since the sharpest change of climate occurs between the coralline crag (early Pliocene) and the red crag. In the Strépyan or pre-chellean stage, as represented in the gravels of the third terrace of the Somme at St. Acheul, the implements consist of almond-shaped nodules generally flaked at the point somewhat in the shape of a hand-wedge. Rude examples of side scrapers and end scrapers, and primitive forms of the boucher, are not uncommon at this stage. It is

¹ Ray Lankester, *R.A.I. Occas. Papers*, 4, 1914.

possible that this culture was contemporary with *Homo Heidelbergensis*. If *Eoanthropus* can be proved to be really Pliocene he must be assigned to a much earlier culture-phase than the Strépyan, but, as has been shown, it is more likely that the skull is contemporaneous with the associated palaeoliths rather than with the eoliths.

The Strépyan implements were succeeded by an industry that produced lozenge-shaped implements flaked all round, called by Prof. Sollas "bouchers," after M. Boucher de Perthes, the first to set forth their significance. This culture-phase is named from the place *Chelles*, eight miles east of Paris, which has produced an abundance of these almond or lozenge-shaped hand-axes worked on both sides—*coup-de-poing* type—in company with *Elephas antiquus*, and *meridionalis*, *Rhinoceros merckii*, *Trogontherium*, cave-bear, etc.

Mr. Reid Moir, in a paper before the Royal Anthropological Institute (December 14, 1915), endeavoured to show, and, as it appeared to the present writer, with no little success, the evolution of the earliest palaeoliths from the rostro-carinate implements. A series of ten implements recovered from the basal layers of the Red Crag of Suffolk, the Norwich Crag, the middle glacial gravel of Suffolk, and the river gravels in the Thames valley and at Warren Hill (Suffolk) were taken as typical examples. The gradual evolution from the most

primitive form of the rostro-carinate to the more highly developed implement of the earliest Chelles type was shown to have taken place by removing flakes by means of blows on the flat lower or ventral plane of a rostro-carinate. Thus a sharp-cutting edge was produced, and the implement rendered rhomboidal in section, approximating to the earliest Chelles type. Mr. Reid Moir, after conducting various experiments, has found that the easiest way to make a Chellean implement is to proceed as if he desired to make one of the rostro-carinate form. In support of his theory he points out that there are traces of a "lateral platform" in many of the St. Acheul implements. This lateral platform is supposed to be the remains of the dorsal or upper plane of the rostro-carinate.¹

Be this as it may, there was obviously a gradual development of type from the pre-Palaeolithic to the Palaeolithic culture. Thus, the next step after the Chellean boucher had been reached, was to sharpen the point or distal end of the flints and straighten the edges, which produces the *Acheulean* type, so called from the place of their discovery at St. Acheul in the valley of the Somme (Amiens). In the Upper Acheulean (St. Acheul II.) the boucher acquires a fine lanceolate form, and is accompanied by numerous smaller implements. The exact use of the Chellean and Acheulean boucher is a matter

¹ *J.A.I.* Jan. 1916, vol. xlv. pp. 197-220.

of some dispute among archaeologists. Mr. Henry Balfour is of the opinion that some of them were hafted and employed as a stone axe. This seems probable, notwithstanding the criticism of M. Commont, since similar implements (celts) were used in Neolithic times, and are, in fact, still used among primitive people.

The next stage is the *Mousterian*, named from the cave at Le Moustier, on the right bank of the Vézère. The fauna suggest a cold climate, as the two earlier elephants, hippopotamus, and *Rhinoceros mercki*, had given place to the thick-coated mammoth. The flints also show a change in workmanship. Instead of being made by flaking a piece of flint (the core) to the required shape, they are made by carefully preparing the core and striking off flake implements at one blow (Levallois flakes). The nuclei are known as "tortois cores." It is usually supposed that this phase represents an advance in culture, as the result of the return of glacial conditions, which necessitated man seeking shelter in caves and clothing himself with skins, the preparation of which called for new and delicate instruments. After spending some weeks in a Mousterian shelter a short time ago, and there carefully examining a great number of implements, etc., the writer came to the conclusion that, in many respects, the workmanship displayed in Mousterian flints is inferior to that of

the preceding Acheulean types. The fact that the Mousterian culture-phase is coeval with the reign of Neanderthal man lends support to the suggestion of a set back in the evolution of the flint industry, since the Neanderthal type appears to represent an inferior human species, destined, in course of time, to become extinct.

At the close of the Mousterian age new races of men entered Europe—perhaps successors of Eoanthropus—together with a new fauna consisting of warmth-loving animals, such as the horse, bison, cave lion, and cave hyena. With the more congenial climate signs of progress in the manufacture of implements became manifest. In the *Aurignacian* culture-phase, so called from the grotto of Aurignac where typical examples of the particular culture were found, the “keeled scraper” (*grattoir caréné*) makes its first appearance. When freed from Mousterian influence there is a marked improvement in the art of flint working. It was in the middle of the Aurignacian that the art of the period attained its highest point of excellence, and such special tools appear as the beaked burin, used for graving, the saw, the drill, the spokeshave, the *grattoir*, etc. The multiplicity of tools found in Aurignacian deposits shows that the workman exercised his skill in many different handicrafts, the most interesting of which is the introduction of a new material for implement making. Rough

awls of *bone* and rods of ivory have been found in lower Aurignacian sites, which tend to become more specialized in the middle and upper Aurignacian, till definite weapons such as arrow-heads without barbs made from reindeer horns at last appear, together with bodkins of the more compact horn of the roe-deer.

During the succeeding phase—the *Solutréan*—flint working reached its Palaeolithic zenith. The industry receives its name from the station of Solutré (Sâone-et-Loire), where some of the finest examples were discovered during the cutting of a canal near Volgu. It is also well represented at the rock shelter of Laugerie Haute on the banks of the Vézère. The distinguishing features of these implements are the fine flaking (the secondary work could only have been produced by pressure, and not by the ordinary method of hammering), and the thinness and the unusual size of the blade. In fact the flaking on the so-called laurel and willow-leaf lance-heads can only be compared with the delicate workmanship on the sacrificial knives of Egypt; and it is quite beyond the powers of the most experienced flint knappers to in any way imitate the degree of skill attained by the Solutréan workers. The apparent lack of practical utility of these works of art has led some archaeologists to suggest that they were votive offerings not intended for common use. In support

of this suggestion it may be mentioned that one of them had marks of red ochre—a sacred substance among some peoples—upon it. Another characteristic implement is a finely-chipped point with a shoulder on one side, the *pointe à cran* of French anthropologists.

In this age sculpture on stone and engraving on bone was practised, although only a few instances of the latter are known. The earliest engravings seem to be those found in an upper level of the Aurignacian period at the Trilobite grotto, Arcy-sur-Cure. They consist of a reindeer bone engraved with a plant, and a schist pebble with a woolly rhinoceros and capridae. But it was in the Solutréan and Magdalenian periods that the artistic sense of Palaeolithic man reached its highest point. Whether the Solutréans practised the art of mural decoration is an open question, though there can be little doubt that the lumps of pigment and ochre occasionally found on the hearths are the remains of the painting materials of this age. The engraving of a cave lion from Combarelles has been referred to the Solutréan, and several drawings are assigned by the Abbé Breuil to this period. It was, however, chiefly in flint working that the artistic sense of the Solutréans finds expression.

The next stage is named after the celebrated rock shelter of *La Madeleine*, also situated on the

banks of the Vézère. As Magdalenian man supplanted the Solutréans, the magnificent laurel-leaf blades immediately disappeared. So great and so sudden is the change in the general character of the flint implements that it is impossible to believe that the Magdalenians were evolved from the Solutréans.¹ True, the artistic sense developed in other directions, but this is not sufficient to account for the fact that the former were as unskilled in flint-working as the latter excelled in it. It is therefore more reasonable to suppose that the Magdalenians migrated into Europe with the reindeer, producing the characteristic long thin flaked implements, the duck-billed blade scrapers and double-ended scraper, together with a quantity of weapons made of bone and horn—daggers, harpoons, lance-heads, dart-points, etc. The flints consist chiefly of implements for making these weapons, and thus an entirely new industry developed in this epoch. The Magdalenian caves reveal three stages in the progress of its development :

1. Lower, without harpoons. Needles, ornamented bone-plates, chisel-ended lance-heads and flints are common.
2. Middle, with harpoons, having one row of barbs. Lance-heads with forked base, and scrapers and engraving tools appear.

¹ Abbé Breuil, *Congress Internat. d'Anthrop.* 1912, xiv. p. 201.

3. Upper, with harpoons having a double row of barbs. In this stage chisels and end-scrapers are found.

The new lance-heads consist of flat or conical rods, pointed at the distal ends, and having a wedge-shaped slit or a similar device for attachment to a shaft, at the proximal end. The union of the head with the shaft was no doubt secured by threads of sinew tightly bound round the joint. Both spears and harpoons were thrown by the hand, sometimes with the assistance of a spear-thrower, consisting of reindeer horn hook-shaped at one end.

Both arrow-heads and spear-heads are usually ornamented with some engraved design. In fact so common was the art of engraving in the Magdalenian age that there is hardly a manufactured tool but is adorned with figures of the fauna characteristic of the period—horse, reindeer, goat, mammoth, etc. Into this category comes the wonderful carving of a mammoth on a piece of ivory.

The artistic conceptions of Magdalenian man, however, were not confined to sculpture and engraving, but included extensive mural decorations in the caves in which he dwelt. These consisted of incised outlines and colour paintings in black and ochre of the fauna of the period. The first to discover these prehistoric art galleries was the little daughter of Marcellino de Sautuola, a Spanish

nobleman, who accompanied her father to the Palaeolithic cave at Altamira in Spain. Growing weary of watching the digging operations she began to look restlessly around; suddenly her attention was arrested, and she cried out "Toros" (bulls). Her persistence attracted the attention of M. Sautuola, who stopped his digging to enquire into the matter. There sure enough on the roof of the cave he saw a number of figures representing bison (which the child took for bulls), deer, horses, wild-boars, asses, etc. Some of the animals were merely engravings in outline, but others were painted in black or in brownish red. This happened in 1879, and during the last forty years a number of similar discoveries have been made in the Dordogne caverns. (La Mouthe 1895, Pair-non-pair 1896, Font de Gaume 1901, etc.) One of the most interesting cave finds was the discovery in the cavern at Niaux (Ariège) of animal figures traced on the mud floor and on the walls, a system of dots and lines in red suggesting picture-writing. Some of the lines appear to indicate a kind of throwing-club or boomerang, and on a bison (which forms part of the picture) an arrow is marked behind the shoulder. On quite a number of primitive drawings markings resembling arrow and arrowheads are to be found, as, for example, in the polychrome paintings of the Zuñi,¹ and in the

¹ *B. Amer. Ethnol.* 1880, pp. 9-43.

famous Bushmen paintings. The purpose of such drawings is undoubtedly to control, by sympathetic magic, the fortunes of the chase.¹

In the next stage of French Palaeolithic art, which is represented by the cave of Azil, the reindeer had apparently disappeared, and the red deer had alone survived. In fact the realistic art of the Magdalenian period suddenly vanishes in the *Azilian*—the closing phase of the Palaeolithic epoch. There is no working in ivory, as the mammoth had disappeared with the bison and reindeer, and thus made room for the existing fauna, characterised by the red deer. Although horses, cattle, pigs, etc., were the companions of the Azilians, these later Palaeolithic folk appear to have been as ignorant of the rearing of domestic animals as they were of agriculture. It should, however, be pointed out in this connexion that in the cavern Mas d'Azil, together with the heaps of burnt wheat, stones of plums, sloe and bird-cherries, and also shells of nuts, have been found. But the most ancient hand-mills for grinding corn are those discovered in Campigny (France) in strata more recent than the Azilian. The manufacture of pottery and the arts of spinning and weaving were also unknown in the Palaeolithic Age.² The only remains of the

¹ For a detailed account of Palaeolithic art see *Prehistoric Art* by E. A. Parkyn, pp. 19-131.

² Dupont and Rutot claim to have found fragments of pottery

Magdalenian artistic development are a few generalised representations made with a paste of ashes, and pebbles marked with stripes or dots. These latter bear a certain resemblance to the designs on the sacred churinga among the Arunta tribe of Central Australia, and to the engravings on the rocks at Pigeon Creek in Queensland. M. Piette claims an alphabetical significance for some of these graphic signs,¹ but it seems more probable to explain them as *totemic* in origin.

The flint working during the close of the Palaeolithic period shows signs of a return to Aurignacian types; the keeled scraper and the burin reappear, while the tiny flints known as pygmy flints, which are occasionally found in the Aurignacian, now become one of the characteristic features of the industry. These so-called "pygmy flints" are extremely minute. Some measure only $\frac{3}{16}$ th inch in size. It seems highly improbable that they belong to any one particular industry, since they are found from the Aurignacian to the Bronze Age. All kinds of explanations have been offered as to their use. Some archaeologists suggest that they were scrapers or knives, others that they were fish-hooks (which

in an Upper Mousterian level in a cave in Belgium, associated with the usual extinct animals. Fragments are also alleged to have been discovered in Belgium in Aurignacian and Magdalenian strata, and by Mr. Reid Moir at Ipswich (*J.A.I.* 47, p. 409).

¹ *L'Anthropologie*, xiv. p. 41, and xvi. p. 1.

is very unlikely, as the Magdalenians used bone implements for this purpose) or employed in tattooing. The most absurd of all suggestions is that they are the normal implements of a relatively small pygmy race. It is reasonable to imagine that the flints were fixed into wooden handles and used as saws and razors, and possibly on to heavy clubs as a means of making the weapon more effective. Neolithic harpoons have been discovered studded with rows of tiny flints, and in Egypt saws are represented in some of the ancient monuments. A tool of this kind was also found in a peat-moss at Palada, in northern Italy.

The characteristic Azilian implement is the broad, flat, harpoon usually fitted with two rows of barbs and a hole at the base through which the string passes. This weapon is made from the antler of the stag. The only bone implements are awls and punches.

Judging from the fact that remains of the Azilian industry are sporadically scattered over nearly the whole of the western hemisphere, it seems that the close of the Palaeolithic period was characterised by great movements of peoples. When at the end of the Glacial epoch the ice retreated towards the pole, ample space was afforded for racial expansion. As we pass from the Palaeolithic to the *Neolithic period* we find great changes not only in the mode of life of the people but in the

geographical distribution of land and sea. Hitherto Britain was part of the Continent of Europe, but with the dawn of the Neolithic, land submergences took place which separated Britain and the Channel Islands from the mainland, leaving traces here and there of submerged forests in the North Sea, the English Channel, and the Irish Sea. The Palaeolithic fauna and arctic flora quickly disappeared, giving place to animals and plants characteristic of a temperate climate. Man too speedily changed his customs. Finding the produce of the chase becoming scarce he gave up his nomadic life for a more settled existence, domesticating a number of the animals by which he was surrounded (horse, dog, sheep, goat, etc.), and cultivating the "kindly fruits of the earth" (wheat, barley, millet, fruits, etc.). Whether this new departure was a result of immigration of new races into Europe, or whether it was merely an outcome of the new environment on a people directly descended from Palaeolithic man it is difficult to say. At any rate the experiment was eminently satisfactory.

From agriculturalists Neolithic man became acquainted with the useful arts—the manufacture of cloth by spinning and weaving wool and fibrous textures;¹ the making of pottery, etc.—but

¹ Since the evidence of weaving could not be preserved it is therefore impossible to definitely affirm that the art was unknown to Palaeolithic man.

apparently he was absolutely devoid of that particular artistic taste that led the people of the later Palaeolithic epoch to decorate the walls of their caves and engrave designs on pieces of mammoth tusk. The energies of the inhabitants of Europe in the new Stone Age were spent in the erection of houses, and the making of clothing, utensils, etc., and the various features of which make for civilization.

The flint industry continued much the same as in the later stages of the Palaeolithic period, except that, after flaking the implement to the desired shape, the Neolithic workers often ground and polished it, thereby improving not only the appearance but also the cutting edge. The flint arrow-head became a characteristic feature in the new industry. So great is the contrast between the tools of the later Palaeolithic and those of the Neolithic Age that several archaeologists have maintained that there must have been a hiatus between the two periods. The discoveries, however, at the cavern of Mas d'Azil suggest an intermediate stage between the two cultures, which may reasonably be supposed to link up the apparently divergent civilizations. For here we have Palaeolithic hunters living side by side with existing types of animals, but unacquainted with the use of pottery, and possibly in the earliest stages of agriculture. Mr. J. Allen

Brown maintained that a "mesolithic period," intermediate between the Palaeolithic and Neolithic, is represented by such forms as those found in the chalk rubble at Birling Gap, near Eastbourne. The animal remains at this site showed a complete mixture of Pleistocene and recent forms: musk ox, bear, cave hyena, elk, wolf, deer, fox.

The flints of the early Neolithic period are often rough axe-like weapons, resembling in many cases Mousterian types. In Norfolk, at Grime's Graves, and in Sussex at Cissbury near Worthing, disused flint mines have been discovered, and a quantity of implements, hammer stones, etc., excavated. These were at one time put forth as a proof of a mesolithic period, because they showed forms like the Neolithic, but at the same time no evidence of polishing.¹ But since Cissbury is usually regarded as a factory site the absence of polished implements is explained by supposing them to have been sent away while the wasters and unground celts remain. There is a series of flints in the Pitts Rivers Museum at Oxford from an American site which shows implements in every stage of manufacture, in percentages decreasing from the roughest to the most nearly finished. It would not be difficult to mistake some of the early stages for Palaeolithic forms, though the finished product is a fine leaf-shaped point. Bearing this fact in mind, we may

¹ A polished celt has since been discovered at Cissbury.

turn to the lively controversy that has taken place regarding the age of these finds since Mr. Reginald Smith, of the British Museum, read a paper before the Society of Antiquaries on May 9th, 1912, in which he assigned the Grime's Graves and Cissbury flint-mines to the Palaeolithic, connecting the typical Cissbury celt with the transitional period between Moustier and Aurignac, of which the typical site is Abri Audi.¹

At the suggestion of Mr. Reginald Smith the writer recently examined a site at Stourpaine, in Dorsetshire, where this particular type of celt has been found, but as all the specimens he discovered were "surface" finds, he concludes that the evidence from this district is unconvincing. Of course it by no means follows that all surface finds are Neolithic, since the plough in chalk downs would in all probability go below the six inches of soil, and therefore it may easily throw up Palaeolithic forms. At Grime's Graves and Cissbury, however, we are dealing with disused *mines*, with deer-horn picks embedded in the strata, just as the prehistoric miners left them, and containing the actual marks of the stone axes on the walls of the subterranean galleries proceeding from the shafts. In such sites as these there is abundant opportunity for accurate investigation.

The implements procured from these mines

¹ *Archæologia*, vol. lxxiii. p. 108, May 1912.

undoubtedly bear a striking similarity to mid-palaeolithic types, but taken in conjunction with other facts the conclusion in favour of a "Cave" date for the deposits is not so obvious. So far no traces of exclusively Pleistocene fauna have been recorded from these mines, all the animal remains—horse, red-deer, sheep, dog, fox, beaver, etc., being characteristic of a Neolithic deposit. Of course it is possible that these animals may have existed in the Abri Audi period, but it is remarkable, to say the least, that there is no evidence of the exclusively mid-palaeolithic fauna. Surely fragments of mammoth, bison, cave bear, *Rhinoceros tichorinus*, or *R. merckii* must have survived in these mines as in all well authenticated Mousterian sites. Again, the antler picks, found in abundance at Grime's Graves, are typical of Neolithic deposits,¹ while the flora—oak, pine, beech, yew, spruce—and pottery point to the same conclusion. As regards the flints, it must be confessed—after spending an interesting hour with Mr. Reginald Smith at the British Museum—that the present writer sees a remarkable similarity of culture between Grime's Graves and certain Mousterian caves, as, for example, La Cotte de St. Brélade, Jersey. But analogy of type is not sufficient evidence to prove that the flint mines at Grime's Graves and Cissbury are Mousterian or Aurignacian factory sites, especially

¹ W. Boyd Dawkins, *Early Man in Britain*, p. 400.

as implements of the same patina and form occur in such Neolithic stations as Weeting, Avebury, Beechamwell, Cranwich, etc. Even the tortoise core and facettèd butt, upon which the argument in favour of a Palaeolithic date for the deposits is largely based, are not unknown in neighbouring Neolithic deposits (Weeting, Beechamwell, etc.), where large blocks of flint have had to be reduced to workable dimensions.

Viewing all the available facts, while admitting the strength of the case for a Palaeolithic date of the implements, we feel bound to follow the orthodox path until further geological and archaeological evidence is forthcoming, and regard the worker at Grime's Graves as a small, dark, long-headed Neolithic man—one of the invaders from the south who discovered the art of pottery-making, of domesticating animals and planting crops, and who probably succeeded in driving Palaeolithic man northwards, whither the reindeer had ere this retreated. Here at Grime's Graves lay scattered about in all directions spear-heads, hatchets, scrapers and discs bearing a striking resemblance to those of the Mousterian culture, together with hammer stones, cores, red-deer antlers, and rudely made cups apparently used as lamps. Surely none other than a Neolithic workshop? The flints were evidently worked on the spot, as battered hammer stones, cores and flakes, as well as finished

implements such as axe-heads, scrapers, and borers are found in the fields around. The axe-heads were no doubt made in such factories as these and then taken away to be ground and polished, the grindstone being a large flat slab of rock or boulder, on which the implement was rubbed (often with the assistance of sand) backwards and forwards until a smooth surface was obtained.

A word here should be added on the famous kitchen middens (*kjökken möddinger*) of Denmark—the large mounds, consisting of kitchen refuse (shells, bones, implements, and fragments of pottery), discovered early in the last century along the eastern shores. Similar heaps have been found in the British Isles, in France, and, at the present day, at *Tierra Del Fuego* and many other parts. In Denmark they appear to belong to the earliest period of the Neolithic Age, for the implements are of a rude description and unground, although some of the flakes show evidence of considerable skill on the part of those who produced them. The animal bones are chiefly those of the stag, wild boar, wolf-fox, and roe-deer. No trace of the reindeer, horse or sheep has been found. The presence of the capercailzie, a bird extinct in Denmark since the destruction of pine forests, shows the antiquity of the Danish middens. There is no trace of domestic animals, nor of cultivated cereals.

The most characteristic home of Neolithic man

was the pit dwelling. A circular pit, similar to that found among the Bushmen, was dug in the ground to a depth of several feet. This was roofed with wattle and daub, and often surrounded by an earthen mound. In these habitations scrapers, arrow-heads, celts, saws, drills, flakes, cores, hammer stones, fragments of coarse pottery, grain crushers, and bronze and iron implements have been found. The presence of metal tools and even Roman coins shows that this form of dwelling survived long after Neolithic times, although before the first traces of metal had appeared higher types of houses were being built. Thus a cluster of pit dwellings have been found at Grossgartach, Würtemberg, in which separate rooms are constructed.

On the banks of lakes in Switzerland and elsewhere some of the Neolithic tribes erected what are known as *pile dwellings*—houses built on stout poles, over the water on the shores of lakes. The security afforded by natural islands probably first suggested the idea of constructing dwellings on lakes. The situation was advantageous for many reasons, but chiefly for the protection it offered against attack by man and beast, and the ease with which a plentiful supply of fish could be obtained. It is therefore not surprising that a great number of such villages came into existence during the Neolithic and Bronze Ages in Central

Europe, once the idea was put into effect, and have lingered on to the present day in New Guinea, Borneo, and on the shores of the lakes of Central Africa. In Britain pile dwellings (called Crannogs) do not appear to have been constructed before the Bronze Age, and frequently they belong to late Celtic and Romano-British times. Thus, the well known lake village of Glastonbury has revealed a valuable collection of relics of late Celtic civilization.

The antiquities discovered in the settlements show that this manner of life extended from Neolithic times through the whole of the Bronze Age into the early Iron Age. The remains found on these sites throw considerable light on the manners and customs of man in the Neolithic and Bronze periods. The number of domestic animals appear to have been small, and the food supply furnished by the wilder species. The horse, pig and sheep were rare until the Bronze Age. Wheat, barley and millet were cultivated by the lake dwellers. Garments woven from flax supplemented skins for clothing. Numerous earthenware vessels which have been discovered testify to the progress made in the art of the potter. Flaked celts subsequently ground and polished—often made of diorite, etc.—constitute the characteristic implement, although arrow-heads, knives, hammers and corn-crushers were also frequently used by the Neolithic pile-dwellers.¹

¹ Cf. R. Munro, *The Lake Dwellings of Europe*.

With the close of the Neolithic period we must leave the culture of primeval man, as with the introduction of metals the progress of civilization made such rapid strides that a separate chapter on the beginnings of civilization must be devoted to the culture of the Metal Ages. Our endeavour in this chapter has been to survey briefly the human artefacts of the Stone Age in their entirety. Ere the Palaeolithic period closed man had attained a complete mastery over the flint industry. In the subsequent Neolithic Age his attentions were distracted by the rise of such arts as pottery-making, weaving, etc., the practice of agriculture and the domestication of animals. As a flint worker, therefore, he tended to deteriorate, although there are many very brilliant exceptions to this rule. Throughout the whole of the Stone Age there is a gradual evolution in culture, which, as we shall see in the next chapter, was not confined to the tool-making aspect of the life of primeval man.

CHAPTER III.

THE MANNERS AND CUSTOMS OF PRIMEVAL MAN.

THE following description of the life of early man, from the pen of Mr. Worthington Smith, in his work, *Man, the Primeval Savage*, may serve by way of introduction, and incidentally of criticism, to a discussion on the manners and customs of our ancient ancestors :

“ If we imagine the darkness to have lifted, we see the men and women standing about or crouching—many carrying bones and stone tools—near fires. There is one central fire and several minor fires bounding the fringes of the human haunt. The fires are kindled from sparks (derived from concussion of flints) applied to dried grass. Some of the men and women are feeding the flames with ferns, twigs, tree-branches, and logs. Other men and women are seen sitting or lying about in dens or hovels formed of tree-branches and stones, or resting under bushes, trees, fallen trunks, or natural sheltering banks of earth. Hairy children are seen running about or crawling on all fours. Bones, some with half-putrid meat attached, are seen

strewn about in all directions. . . . The women have gestures and sounds sufficient for their wants. At a signal of danger they point and imitate the roar of the lion, the growl of the bear, or the bellowing of the elk. Some of the female adults are seen to be nursing or suckling hairy infants. Some of the older and feebler males and females are seen walking with branches or sticks hacked from trees. Some, especially the young people and children, are full of vivacity and frolic, others are in ill-health, burnt with fever or wheezing and coughing with colds. . . . Fever patients, consumptives, the blind, the half-blind, and fractious children are driven off and killed, for the earliest human savages probably possessed but scant sympathy for either pleasure or pain in their fellows. He did not bury his dead, and our remote precursors probably paid little or no more attention to a human being than a dog now pays to the dead body of a fellow-dog. Death was not foreseen or understood. A dead man was really a man lying down who did not, could not, or would not get up again. His carcass was left for wolves and hyenas. . . .

Any curiously twisted or contorted branch or twig, any curious stone or fossil, he would pick up, examine, smell, and possibly dread. Perhaps primeval men set up fetiches in their haunts. . . . Of course there was no marriage, but there was pairing, and it is probable that one male would

keep more or less to one female, but only till one birth had taken place. After one birth there would probably be fresh pairing. . . . At pairing seasons there would be terrific roaring, yelling, biting, and fighting amongst the males. The weaker males would be torn and killed, and left for the hyenas; the fittest, strongest, and handsomest would survive.”¹

This dreary picture of “Man, the Primeval Savage,” is hardly equalled by the gloomy view of modern people in a primitive state of culture portrayed by Sir James Frazer in *The Golden Bough*. Just as the latter writer represents the savage of to-day as the victim of all kinds of hallucinations, and the prey of malignant spirits at every turn, so the former regards the customs and manners of primeval man as more brute-like than those of the lowest savages now existing. No doubt the theory of a gradual development from a creature like *Pithecanthropus* has led many anthropologists to see in Palaeolithic man nothing but a rude, tool-making animal, devoid of all ordered social organization, and incapable of any conception of religion. With the discovery of human remains bearing a striking resemblance to modern man, in the very early gravels, primeval man has been regarded as capable of something more than mere tool-making. In fact the high degree of skill attained in the later

¹ Pp. 49-54.

Palaeolithic — especially during the Solutréan culture-phase—suggests that the being who made the wonderful “laurel-leaf” lance-heads, delicately flaked on both sides, in a manner surpassing all imitation by modern European flint-workers, was endowed with an artistic intelligence such as is not possessed by primitive man of to-day.

Unfortunately we have no time-machine by which to revisit the scene of man’s earliest life in this world. But by laboriously combining the evidence derived from the discoveries of the implements, caves, river-gravels, settlements, and other works of primeval man, together with that of his bones, and then interpreting these survivals in the light of modern primitive culture, we are able to determine to some extent the manner of man our ancestor was, the kind of life he led, and the customs and rites he practised.

In the last chapter we had a glimpse of “Man, the primeval tool-maker,” and from the evidence of human artefacts alone we see that Mr. Worthington Smith’s “primeval savage” was an exceedingly skilful artificer. Furthermore, in later Palaeolithic times he was an artist and an engraver of no small ability. Can it be, we repeat, that the being who was responsible for these Palaeolithic arts and industries was in reality the howling, biting, fighting, fever-stricken creature, without natural sympathy and devoid of all social and religious

organization, as he is portrayed to have been by Mr. Worthington Smith ? ¹ His assumption is, of course, pure conjecture—as, to a certain extent, must be every picture of the mode of life of early man which is not supported by evidence from existing races now in the Stone Age.

In the very earliest stages of human development it is, of course, true that man was very primitive in his way of life. The person who first exercised his handicraft on chipping flint for a specific use was doubtless very much more rudimentary in his habits than his skilled descendants in the later Palaeolithic. But even so, unless we are prepared to identify *Homo Primigenius* with proto-man—a sort of Prepithecanthropus inhabiting the earth in the Oligocene or Miocene epochs of the Tertiary period—we shall find it difficult to fit in the archaeological and the anthropological evidence to the requirements of Mr. Worthington Smith's "primeval savage." For our part, we are content to confine our attention to the definitely human being that arose at the end of the Pliocene or the beginning of the Pleistocene, till such time as sufficient evidence is forthcoming of the existence and habits of the hypothetical potential ancestor of *Homo Primigenius*.

¹ Of course if Mr. Smith's description refers to "proto man" it may be more or less correct, but it does not describe, so far as we can judge, the life of Palaeolithic man.

Let us now try and visualize man as he was at the earliest known human stage of evolution. As regards stature he was not very different from modern man, but with a longer body and arms and shorter legs. The head was not abnormally small, but invariably dolichocephalic ; the jaw was powerful and prognathous, but the chin receded. The brow ridges were probably prominent and the nose broad. Until he became a hunter of large animals he would be presumably *unclothed*, as he would not have skins at his disposal. Furthermore, fur-bearing animals were not plentiful in the warm climate prior to the Glacial period. It may be therefore reasonably supposed that clothing, like cave-dwelling, was one of the arts of life learnt by man in the Pleistocene—probably early in the Mousterian phase.

Likewise *fire*, though familiar to man from the beginning, was not used by him till he had learnt the secret of its properties and devised some means of obtaining it. How and when this was accomplished is not known. In the early Pleistocene there is evidence of its existence, as, for example, in the hearths discovered in Mousterian sites. There are two obvious sources of natural fire—lightning and volcanic lava. The latter is limited to certain areas, and the former would be but sporadic. Moreover, at such conflagrations he would be so terrified that he would not be in a

position to appreciate the result. Another way in which forest fires are accidentally kindled is by friction of boughs in a stormy wind creating a dust that in due course would ignite. In the sort of climate in which earliest man apparently lived bamboo, and the sort of wood that most readily ignites by attrition, would be plentiful, and, therefore, it is possible that an observant mind experimented in the generation of heat, and the consequent manufacture of fire by rubbing together two pieces of wood. This suggestion is supported by the widely distributed custom of frictional fire-making among primitive people to-day, and, all things considered, appears to be the most probable explanation of the origin of fire.

Having discovered a method by which fire could be obtained, it would not be long before our primeval ancestors found abundant uses for this all-essential phenomenon. It would soon be ascertained that fire was a means of safety from the attacks of hostile animals, and that cooked food is more palatable than raw flesh. The hardening effect of this force would be of much value in the manufacture of spears, etc. Little wonder then that, in process of time, it came to be regarded with superstitious awe as a gift from heaven.

Passing from the arts of life to the question of primeval *social organization*, we are at once faced

with very difficult and complex problems. Obviously little light can be gleaned from archaeological remains, and therefore we must turn for clues to the lower creation, on the one hand, and, on the other, to those races which have remained in more or less a Palaeolithic stage of culture. Many of the lower creatures, such as baboons, monkeys, dogs, bees, etc., live in communities governed by a chief who controls the movements of the troop. On the death of one leader another is assigned to the office by the general consent of the herd; strength, size, and shrewdness being the qualifications usually demanded for the position. The community is divided into smaller groups—families—each of which is allotted a special territory, with definitely established boundaries. A regular system of mating, often of a semi-permanent type, is common among the higher animals, constituting a prototype of primeval marriage. It seems that earliest man inherited from his ancestors in the lower creation the instinct of a social organization which developed into the system still set forth by modern races of primitive people. It is, of course, open to argue that such people as the Australians, Bushmen, and the now extinct Tasmanians, have had countless ages in which to evolve social and religious systems which was not the case with Pleistocene man. On the other hand, it may be contended that the same people have also had equal time to *degenerate*

in an isolated environment. Be this as it may, it is now recognised by anthropologists that, for purposes of securing a working hypothesis, the manners, customs, and beliefs of modern savages may be taken as a standard from which to deduce general principles. We will, therefore, now proceed to a further investigation of the manners and customs of primeval man by the method of reasoning by analogy.

Of all recent races of man in a primitive state of culture the Tasmanians were the lowest. When they became extinct in the latter part of the nineteenth century, they were still living in the Palaeolithic age—some have gone so far as to describe them as an Eolithic race, since their implements were made by simply chipping a piece of flint in eolithic fashion. Mr. Henry Balfour, on the other hand, is inclined to regard them as representing a separate industry, while Prof. Sollas inclines to Tylor's opinion that they resemble the Mousterian culture. The flints in question were made from artificially produced flakes, in a few cases with neatly trimmed edges, but mostly showing an irregular outline. The implements may, therefore, be safely described as pre-Aurignacian in character, and, unless they belong to a separate industry, they can perhaps most correctly be assigned to an early stage of the Mousterian. Huxley regarded both the Australian and Tasmanian skulls as more

or less Neanderthaloid, and some authorities have actually described these races as survivals of Neanderthal man. But the type has little in common with the Neanderthals, except in so far as they are platycephalic and show a retreating forehead, flattened occiput, prominent supra-orbital ridges, and slightly developed chin. Boule therefore seems justified in concluding that "all these modern so-called 'Neanderthaloids' are nothing more than varieties of individuals of *homo sapiens*, remarkable for the accidental exaggeration of certain anatomical traits which are normally developed in all specimens of *Homo Neanderthalensis*."¹ It would, therefore, seem that there is reason to regard the race as unchanged descendants of an independent stock—*Homo sapiens tasmanianus*, as Dr. Sergi calls it. In any case the Tasmanians were a Palaeolithic race, surviving but little changed throughout the ages.

Most unfortunately, practically nothing is known of these highly interesting and instructive people beside the fact that they lived a nomadic hunting life, wore little or no clothing, except in winter, when skins were sometimes worn, and that they used flint and wood implements. They were certainly acquainted with fire, which they made by rubbing the pointed end of a stick to and fro in a groove cut out in another piece of wood, or by

¹ *Ext. Ann. Pal.* 1913, pp. 66-75.

rotating one stick on another in a hole. They made rough attempts at drawing and painting which compare favourably with the efforts of Magdalenian man. With canoes proper they were unacquainted, but they are said to have possessed a useful substitute, consisting of a bark "raft," made by lashing together with coarse grass the bark of the eucalyptus tree. But of their social and religious organization nothing is known.¹

Of the other primitive race still in the Stone Age more has been determined, thanks to the researches of Messrs. Spencer and Gillen, Dr. Howitt, Ling Roth, and other first-hand investigators. It is now generally admitted by anthropologists that of all surviving races the *Australians* are apparently the lowest in culture, and nearest to the primeval type. In their native state they are unacquainted with the use of metals, pottery, and agriculture, nor do they practise any of the arts and industries found in the higher civilizations. Their flint implements and bone awls resemble in certain aspects Magdalenian types, while their polished celts show Neolithic characteristics. But with this latter exception the Australians are still in a Palaeolithic stage of culture, a conclusion supported, with the aforementioned reservations, by their physical features. The low retreating forehead, prognathous jaws, depressed cranial vault, and small

¹ Cf. Ling Roth, *The Aborigines of Tasmania*.

capacity, large teeth, prominent brow-ridges, and dolichocephalic skull, all suggest Palaeolithic characteristics.

The origin of the people will be considered in a later chapter. Suffice it to say here that although the Australians are not necessarily direct descendants of the species that inhabited Europe in the mid-Pleistocene, they must have become isolated at a very early period while still living a life of primitive simplicity. This is suggested by the absence of all traditions and myths relating to their migration to the continent. Moreover, they agree in type so closely among themselves that they are now regarded as a distinct race.

The Australian is a cheerful, but treacherous, individual, who lives on the products of the chase. He never, in his native state, rears cattle, domesticates animals (except the dog), cultivates the soil for any kind of food-crop, builds permanent dwellings, manufactures clothing, nor wears anything on his body except a hip girdle, necklaces of animal teeth, and similar adornments (nose pins, etc.). Sometimes in cold weather he puts on skins or matting. The Australians dwell for the most part in rude huts or wurleys, made of grass-tree, or occasionally of paper-bark. These are made by the women. In some districts more permanent structures are erected, built of logs of wood and thatching plastered with clay, and erected on a

wooden frame. Circular stone erections are said to have been used in North-West Australia. The large huts are intended for more than one family, or for the unmarried men and youths.

The Australian is an able and sagacious hunter, and, unlike the Tasmanian, he is also a fisherman. The famous boomerang is a deadly weapon in the skilful hands of the native, and in West Australia fish are even procured by a special fish boomerang. Besides this, clubs with various shaped heads and stone-headed spears are in use throughout the country. The women are usually provided with a digging-stick which is sometimes used for defensive purposes. In hunting animals the Australian black usually follows his prey till he has tracked it down. When it runs he runs, when it stops he stops, and so on, till at last the man proves sturdier than the beast (usually a kangaroo). This method of catching kangaroos requires a hunter of exceptional endurance to bring it to a successful issue, and is therefore less frequently adopted than hunting with dogs or securing the prey in nets. Emus, being powerful birds and fleet of foot, are not easily captured. The native usually watches the tracks near a waterhole. When the birds come down the hunters set up an immense net behind them, or else drive them into pits dug near the feeding grounds. Ducks are often taken by stretching a net across a river, although they are also

stalked, speared, or snared by nooses set in the swamps. Fish are procured by the simple method of the native walking into the water and catching the fish with his feet. Big reptiles, such as the turtle, are captured with the aid of a sucker fish. This is taken out to sea, the native tying a string to its tail and putting it overboard to serve as a means of securing his prey. Thus he is enabled to aim correctly his harpoon. In some parts bone or shell hooks with worms, shrimps, and crabs as bait are used. In New South Wales fishing with hook and line is the special province of the women. To catch water-fowl the black-fellow will swim under water and pull the bird down. In like manner, to procure a meal of pigeon or cockatoo, he gets into a tree at night and lashes out with a stick at the birds as they fly past.

Opossum hunting is a most sportsmanlike pursuit in South Australia, where the animal abounds. The hunter carefully examines the trunks of the trees in the forest, to see whether there are any recent marks of opossum's claws upon them. The trained eye can at once tell by the scratches if the animal's last move was up or down the tree. If the former be the case, he either makes a fire at the bottom and smokes him out, or he climbs the tree, cuts a hole in the trunk where he believes him to be concealed, and pulls him out!

The flesh of animals and fish is usually cooked. Occasionally, if the native is very hungry after a long chase, he will eat his prey raw, or, in the case of a fish, just fling it on the fire and eat it almost immediately. But when not so ravenous he cleans his fish, and plucks and draws his birds, cooking them on hot ashes, and serving them on a dish of bark in a most appetising manner.

Before leaving the subject of the food quest we must refer to the practice of cannibalism. Except as part of a religious ceremony, or on very rare occasions, human flesh is not eaten. The Australian aborigines are not cannibals. Usually the revolting practice is only resorted to in order to acquire the strength of a dead man, or to establish a vital union with the dead. Enemies are sometimes eaten to prevent their coming together again, and should a man in the Turribul tribes be killed in the ceremonial combats that follow initiation ceremonies, portions of the flesh are eaten as a sacred meal.

As regards vegetable food, yams and similar roots are dug up by the women and eaten raw or roasted. Seeds are collected and ground between two stones, and often baked into cakes. Nuts are roasted in the fire, after having been soaked in water for a considerable time. Grubs are also eaten, sometimes raw, sometimes cooked. Ants' eggs are also a favourite article of food. The black

tracks down bees to their hives in trees, cuts out the nest (the bees being stingless), and extracts the honey.¹

Notwithstanding the fact that primitive people are usually skilful hunters, as has been shown above—there is no tribe in Australia unable to secure food by natural means—yet supernatural or magical influence is invariably brought to bear on the chase. This has been illustrated, as regards Palaeolithic man, by the Aurignacian and Magdalenian cave paintings. As M. Salomon Reinach points out, all the animals represented are such as are desirable for food,² although his second statement, that “undesirable animals” are not depicted, is not correct, since a lion, a bear, and a wolf have been found on the wall of Combarelles, and a wolf at Font de Gaume. It by no means follows, however, that these animals were not eaten by Palaeolithic man. Nevertheless, there seems little doubt that the metaphorical magic of the artist’s pencil had once a literal meaning. Mr. F. H. Cushing describes the images of their totems carved out of stone by the Zuñi Indians, with a flint arrow bound to the fetish.³ This apparently corresponds to the arrows painted on the side of the bison at Font-de-Gaume. The image is set apart for magical

¹ N. W. Thomas, *Natives of Australia*, pp. 88-118.

² *L'Anthropologie*, xiv. p. 357.

³ *Bureau Amer. Ethnol.* 1880, pp. 9-43.

purposes at the New Year Festival. Every hunter carries the fetish with him in the chase. Likewise among the Ojibwa Indians the medicine man makes a drawing of the animal to be hunted and paints the heart in vermilion, drawing a line from it to the mouth, along which the image passes at his incantation.¹ Again, the paintings of the Bushmen recall the mural decorations of the French and Spanish caves, and these we know were for sympathetic magic, rather than for æsthetic purposes.² In the sandstone caves of the Natal Downs (Australia) the Pegulloburra tribe make drawings of emu and kangaroo, and incidents of the chase, together with impressions of the hand daubed with red.³ From an artistic point of view these sketches are inferior to those of Palaeolithic man, and obviously belong to a different school from the Aurignacian, but, nevertheless, judging from similar decorations on *Churinga* or sacred amulets, weapons and various other objects used in sacred ceremonies, they must be magico-religious in intent.

Here is an actual case of Palaeolithic customs being practised by primitive man of to-day. These designs are therefore interesting, not only because they represent another aspect of the food quest,

¹ W. J. Hoffman, *B.A. Eth.* vii. 221-223.

² H. Tongue, *Bushman Paintings and Anthropos*, viii. 1913, pp. 652 ff. and 1010 ff.

³ Curr, *Australian Race*, ii. p. 476.

but also because they show a real connexion between the manners, customs, and beliefs of primeval man and those of modern savages. Thus is justified the anthropological principle of determining the manner of life of the earliest human inhabitants of the earth, by an investigation of the rites and customs of surviving primitive people. The brief description of Australian culture given above will doubtless suggest to the archaeologist many Palaeolithic parallels. The aborigines, like Palaeolithic man, are hunters and flint-workers, they are unacquainted with agriculture, the domestication of animals, the erection of permanent dwellings, and yet the same artistic concept found among the men of the later Palaeolithic epoch is set forth in their caves and on their rocks. Is it too much to suppose that Palaeolithic man also performed *Intichiuma* ceremonies, whereby the Arunta and other Australian tribes increase the supply of the particular totem, animal, or plant by sacred rites?

Messrs. Spencer and Gillen, the well-known anthropological investigators of the tribes of Central and Northern Australia, have described what took place at the *Intichiuma* ceremonies in connexion with the witchetty grub totem at Alice Springs, in the Arunta country. The men of the local group assemble in the spring, and on a given day proceed, late in the afternoon, to Emily Gap, a

place especially associated with the Alcheringa¹ ancestors of the group. *On its walls are the sacred drawings characteristic of the totem*, a fact that suggests a totemic significance for some of the Palaeolithic paintings. The Alatunja, or leader of the ceremonies, carries a small bark food vessel (called a *pitchi*, or, in this particular case, an *apmara*) and the rest of the party have in their hands little twigs of the Udniringa bush, on which the totem feeds. When the party reach a spot known as *Ilthura oknira*, placed high up on the western wall of the gap, they gather round a shallow cave, in which there is a large block of quartzite, surrounded by several small stones. The big stone represents the adult animal, the little stones being the eggs. First the leader taps the big stone with the twigs he carries in his hand, and invites it to lay eggs. He then rubs the stomach of each of the men with one of the smaller stones, saying "You have eaten much food." After visiting some ten of these spots, and repeating the same ceremony at each, the party returns to the camp and holds sacred ceremonies in the wurley erected for the purpose.²

Other ceremonies of a similar character are

¹ The mythical past or "Dream Time," in which the ancestors instituted the native ceremonies, and regulated the social organization.

² *Native Tribes of Central Australia*, pp. 170-179. Cf. the author's *Primitive Ritual and Belief*, p. 94.

performed in the autumn, but since their purpose is to effect a union of a sacramental character with the sacred species rather than to secure a supply of the totem, their description will be reserved for the next chapter. In the rites we are now considering there are several important links with prehistoric times, of which the drawings on the walls at Emily Gap and the use of red ochre may be quoted as examples. This evidence is supported by the fact that the Intichiuma ceremonies are closely connected with the magical control of the food supply, which has also given rise to cave paintings among the Bushmen and the Indians of America, analogous to those of the Magdalenians.

Now, if we are correct in our view that ceremonies corresponding to the Intichiuma rites of the Australians—we do not suggest that they were in any way identical—were performed by man at the end of the Palaeolithic epoch, then another conclusion of no small importance naturally follows. The Intichiuma rites are the outcome, on the social side, of the *totemic organization of society*. Among primitive people a certain relation is assumed between man and animals and plants, and occasionally an inanimate object such as wind, rain, a stone, etc. Very often this kinship is supposed to be due to the original groups having arisen out of animals and plants. In Australia the *Inapertwa*

(rudimentary men) are regarded as a stage in the course of transformation of complete men and women from lizards, rats, parakeets, emus, hakea trees, etc. Naturally when the groups were eventually formed they were intimately associated with the animals and plants out of which they were evolved, the particular object becoming the totem. It is not unreasonable to suppose that some of the Palaeolithic paintings and carvings have a totemic significance, as, for instance, the mystic signs found on the painted pebbles at Mas d'Azil, which bear a certain resemblance to the Australian totemic designs. Again, according to Dr. Marett, the curious arabesques, made by the fingers in the gluey clay of the walls and roof of the cave at Gargas, are imitations of the scratches left by the cave-bear—the totem of these particular Aurignacians.¹ Taken collectively and in conjunction with the fact that the primeval inhabitants of Europe, like the Australians, depended on the chase for their food supply, the evidence suggests the probability of the existence of totemism in the Palaeolithic age.

There are three important features of the relation between human beings and their totems. (1) The totem is connected with a definite social group, and in the typical form of the institution this social division is exogamous (*i.e.* the law of

¹ *The Threshold of Religion*, p. 217.

marrying out of the totem group). Often the group makes the name and the badge of the totem its own. (2) The members of the totemic group believe themselves to be "one flesh" with the totem, and often think they are descended from it. (3) There is a mystic bond between the totem and the totemite which is of a sacramental nature.

The result of this is that the totem tends to consolidate a group of individuals, having a common relationship—being all "one flesh" with the sacrosanct animal—into a distinct social unit. These *totem groups* are comparatively small, and form sub-divisions of the *phratries* or moieties into which the tribe is in the first place divided. In Australia the phratries are again divided into *classes*, either four or eight in number. This is a special variety of the exogamous system in which a person has not only to marry outside his own class, but also into a specified group. The totem-kins are cross-divisions with the classes. There seems to be no limit to the number of totem groups which may exist in a tribe, but the same group is seldom found in the two phratries. The relationship between the totem and the totemite makes the members of the same totem-kin regard themselves as brethren, and therefore they act together on all occasions, and an injury wrought by any one of them may be avenged on any other, so close is their relationship.

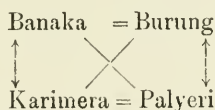
Closely associated with the totemic organization of society is the practice of *exogamy*. This custom forces men and women to contract unions with the members of distinct food-groups, a practice not without economic advantage among people in a hunting stage of society. Thus, supposing the Cockatoo and Crow people are food-groups of the same totem-kin, all the members of each group are brethren because they are "one flesh." These are, we suppose, exogamous, and, therefore, Cockatoo men must marry Crow girls. To borrow further from Dr. Marett's excellent example,¹ let us imagine that the groups are separated by a river. After marriage the Cockatoos and Crows each abide on their own side of the river, where they are visited by their partners from across the water, who naturally are regarded more or less as outsiders, notwithstanding the fact that they are totemic brethren. The children meanwhile grow up in the Cockatoo and Crow quarters respectively as little Cockatoos and Crows. Any correction that is found to be necessary in the upbringing of the young Cockatoo is exercised by the Cockatoos and not by the Crows though the father be a Crow. As the child grows to manhood he shares in the Cockatoo toils and spoils of the chase, inherits the weapons and other property of his group, and is initiated into their totemic

¹ *Anthropology*, pp. 169 f.

mysteries. In the event of the Crows entering into deadly conflict with the Cockatoos, the youth has to fight for the latter against his father's people. It is therefore evident that where the wife stays with her group—a system technically known as matrilocal marriage—the life and interest of the children is wholly bound up with the mother's totem-kin, and, in consequence, descent is usually reckoned matrilineally. When matrilineal, matrilocal, and matripotestal (supreme authority exercised over the children by the mother and her group) conditions are found together, we have *mother-right* at its fullest and strongest. It, however, does not follow that wherever a totemic basis of society prevails mother-right is found, although where there is an evolution it invariably happens that the development is from mother-right to father-right.

The simplest organization is represented by the Urabunna and Dieri tribes of Australia, where dual organization, the system of marrying across, prevails. Among the Dieri the totem-kins are found in the phratry, but it is so arranged that no kin exists in both phratries, and marriage is regulated simply by the rule of exogamy. Among the Urabunna one totem-kin may not intermarry with any and every totem-kin of the opposite phratry, but each is limited to one kin. Thus, Wild Ducks are only allowed to marry Carpet Snakes, the children taking the name of their mother's totem

(i.e. matrilineal descent). A similar dual organization is found in Melanesia.¹ The Kariera tribe on the north-west coast of Australia is divided into four classes—Banaka, Burung, Karimera, and Palyeri.² A Banaka man may only marry a Burung woman. Their children will be Palyeri, while those of a Burung man and a Banaka woman will be Karimera. The system may thus be described graphically :—



It will be observed that man and wife must belong to opposite phratries, and that “descent follows the distaff”; the children belong to the same phratry, though not to the same class, as their mother.

These examples suffice to show that the totem-kin is the social unit with the tribe—the political unit of the inter-marrying groups. Occasionally an inter-tribal gathering takes place, as for example, for the purpose of holding initiation ceremonies, but this is a more or less rare occurrence. First a man belongs to the phratry, which is divided into two, four, or eight exogamous classes. But he also has a narrower relationship, that of the individual *family*.

It has been asserted by many anthropologists in

¹ Dr. Rivers, *History of Melanesian Society*. ² *J.A.I.* xliii. pp. 143 f.

the past, of whom Morgan, Bachofen, MacLennan, and Lubbock may be taken as examples, that primeval society consisted of an undivided commune in which marriage was unknown. No doubt the popularity of this hypothesis was largely due to the fact that it supported the theories of primitive common property and of economic determinism of the Marxian school of socialists. Almost the only positive evidence in its favour is the fragmentary testimony of some ancient classical writers such as Herodotus and Strabo, but even if the examples quoted refer to promiscuity, they are too few to justify the conclusion that all peoples lived originally in the conditions which they describe. As to the indirect evidence in favour of the theory, consisting of inferences from such customs as matrilineal descent, religious prostitution, unrestrained sexual intercourse before marriage, and primitive community of property—every one of these conditions can be explained more easily on other grounds than on the assumption of promiscuity. The attitude of recent authorities to the theory is thus set forth by Howard: “The researches of several recent writers, notably those of Starcke and Westermarck, confirming in part and further developing the earlier conclusions of Darwin and Spencer, have established a probability that marriage, or pairing between one man and one woman, though the union be only transitory

and the rule frequently violated, is the typical form of sexual union from the infancy of the human race.”¹

Morgan, who is largely responsible for the promulgation of the doctrine of primitive promiscuity, first studied the Iroquois, and, no doubt, thoroughly digested their social organization. He subsequently put Fison on to collect similar facts in Fiji. This latter investigator afterwards went to Australia, where he met Howitt. It is, therefore, easily explained why Howitt is inclined to find group marriage everywhere in the South-East district, since he had been indirectly (through Mr. Fison) brought under the influence of Morgan. Dr. Frazer, in his *Totemism and Exogamy*, adopts much the same lines as Morgan.

There are four main arguments put forth in favour of communal marriage :

(1) *The Classificatory System*.—Because the savage calls all men father it is argued that he has no conception of individual paternity. But it should be remembered that he also calls all women mother. It is surely contrary to the natural order of things to suppose that a woman does not know her own child as distinct from other children, and that the child regards all women as its mother. Again, it is said, the matrimonial class does not define actual marriage but marriageability. That is to say,

¹ *History of Matrimonial Institutions*, i. pp. 90, 91.

it defines a group in which a selection of partners may be made according to choice. But the mere fact that the class system shows a man where to look for a wife, presupposes the existence of individual marriage. The classificatory system is based on exogamy. The question, "Why do people marry out?" necessitates by way of answer, the definition of marriageability.

(2) *Supplementary Unions*.—According to Gason¹ the Dieri girls are betrothed to one man in infancy, who in due course becomes her *Tippa-malku* husband. This is an individual relationship, since no woman can be *Tippa-malku* to two or more men at the same time. In due course certain supplementary unions are sanctioned by the council of old men. This is called the *Pirrauru* relationship, which is one in which a group of men and women have the right of sexual intercourse with one another. But a *Pirrauru* is always a wife's sister, or a brother's wife, or in some such definite relationship to her partner. Therefore the system is merely an extension of conjugal rights within what the savage regards as the "family circle." Furthermore, the relationship is only supplementary. When a man goes on a journey the *Piraungaru* husband steps in his place; or, if a visitor, being of the proper class, calls upon a friend, the host may offer him his

¹ Woods, *Native Tribes of South Australia*, and Howitt, *S.E. Tribes*, p. 177.

Tippa-malku as a temporary *Pirrauru*, provided he is *Noa* (i.e. in the relation of "spouseship") to her. Therefore this system, though regrettably loose, does not constitute promiscuity, but rather represents an extreme degree of private ownership. In like manner, the sexual relations between groups of men formed by the husband's brothers and the group of women formed by the wife's sisters in Melanesia are but the extension of marital rights to members of a conventional brotherhood.¹

(3) *Ritual Defloration*.—Among all the tribes examined by Spencer and Gillen ritual defloration is practised on the girl by men standing to her in a definite relationship, as a marriage ceremony connected with the handing over of the girl to her allotted husband.² There is, however, no reason to suppose that this is a survival of primitive promiscuity. It is rather, as will subsequently be shown, a religious ceremony—a "rite de passage" safeguarding the dangers to which individuals are subjected at any transition from one period of life to another.

(4) *Ceremonial License*.—Besides ritual defloration and the *Pirrauru* relationship, considerable license is allowed on certain occasions when large numbers of men and women are gathered together to perform corroborees.³ At such times conven-

¹ Howitt, p. 175 ff. ; Seligmann, *Mel. of Brit. New Guinea*, p. 473.

² *Native Tribes*, p. 9 ff.

³ *Native Tribes*, pp. 96, 97.

tional restrictions such as class rules are broken down, but blood ties are respected. A man may have, in connexion with certain ceremonies, access to his mother-in-law, who under normal conditions is strictly tabu to him, but under no circumstances can there be any relaxation of the rule of chastity observed within blood relationships (actual father, brother and sons of a woman). Therefore it may be concluded that on all occasions when ceremonial license takes place, the strict class exogamy does not hold good, but incest as regards blood relationship is always strictly forbidden, and consequently a state of real promiscuity does not exist.

Enough has been said to show that there is good reason to suppose that primeval society was not an undivided commune in which "there is no marriage." If our surmise is correct, that Palaeolithic society was ordered on a totemic basis, the theory of primitive promiscuity absolutely falls to the ground. We are therefore of the opinion that from the earliest days of man's pilgrimage on the earth there was marriage and giving in marriage, if by marriage is meant "a union regulated by custom and law."¹ The tribe has yet to be found in which unions are not regulated by custom and law. Dr. Malinowski, in his *Family among the Australian Aborigines*, has clearly proved the

¹ Westermarck, *Origin and Development of Moral Ideas*, ii. p. 364.

existence of individual marriage as opposed to primitive promiscuity among the modern representatives of Palaeolithic man. He quotes forty-nine instances of the way wives are obtained by the natives, most of which are of a specific nature.¹ The simplest, and therefore perhaps the commonest, method of procedure is to exchange a sister for a wife. Betrothal often takes place at or even before birth, showing *ipso facto* how deeply rooted is the idea of the individual right of a man to a woman in the primitive mind. Even in elopements there are certain rites and formalities that have to be observed, as, for instance, the magic sleep into which the parents are cast and the hasty retreat of the lovers to a convenient distance from the camp ere the irate parents awake. Marriage by capture is not unknown; but Mr. Curr is probably correct in saying that this method is more or less rare, as it would lead to constant attacks from the tribe from which the woman was stolen.²

The elaborate system of phratry organization described above greatly restricts a man in the choice of a wife. By the class system intermarrying between brothers and sisters is prevented, though the object of the system originally was probably to prevent marriage between people of different generations not related by blood. In the Arunta there is, unlike most Australian tribes,

¹ Pp. 34-66.

² *Australian Race*, i. p. 108.

no restriction whatever, as far as totems are concerned. In several of the Central tribes the totem-kin is found in both phratries, and tends to coincide with the local groups. Although methods of securing wives in the Arunta district include the magic use of love-charms to entice a girl to her lover, and also capture and elopement, it is the custom of *Tualcha-Mura* that is the most useful method of obtaining a wife. An arrangement is made between two men that the relationship shall be established between their two children, one a boy and the other a girl, both of tender years. They are then taken to the women's camp where each mother rubs the other child all over with a mixture of fat and ochre in the presence of all the other women. Some of the girl's hair is cut off and given to the boy to signalise the fact that when grown up it will be her duty to provide him (her son-in-law as he will be) with her own hair from which to make him a waist-girdle. The girl must be *Mura* to the boy, that is, one whose daughters belong to the class from which his wife must come. By this ceremony she becomes *Tualchamura*, i.e. his actual or prospective mother-in-law. This relationship indicates that the man has the right to take the daughter of the woman; she is, in fact, assigned to him, and this, as a general rule, many years before she is born.¹

¹ *Primitive Ritual and Belief*, pp. 51 f.

Enough has been said to show that if the Australians can be taken as an example of a really primitive community, there is no reason to suppose that primeval society consisted of an undivided commune. The martial relations of the tribes fall under three headings. The first is the normal one, when the woman is the wife of one man ; and no one, without his consent, can have access to her. The second is the wider relation in regard to particular men at the time of marriage. The third is the still wider relation which obtains on certain occasions, such as the holding of important corroborrees. It must not be forgotten, however, that licentious as is the last named relationship, it is the exception rather than the rule. Under ordinary circumstances, for a man to have intercourse with a woman who is not his lawful wife is a very grave offence, and liable to punishment by death. Furthermore, except in those tribes in which the *Pirrauru* relationship exists, the system of individual wives prevails, modified as indicated above.

Among all the tribes described by Messrs. Spencer and Gillen, there seem to be some marriage rites. The ceremonies usually consist of ritual defloration by men standing in a definite relationship to the girl, followed by intercourse and decoration of the head and body with a mixture of fat and ochre. This is undoubtedly the crudest form of marriage

known, and yet it is a definite social and religious act constituting a valid union of man and woman. In the case of marriage brought about by magically attracting a woman from one camp to another, the act of union appears to effect a kind of sacramental alliance. If St. Paul considers that casual intercourse with a harlot produces a permanent union between man and woman (1 Cor. vi. 16), how much more should the merging of two lives into one by marital relations be considered a valid marriage effecting a permanent alliance. We therefore conclude, judging from the Australian evidence, that marriage is the socio-religious act by which, from the earliest times, the natural inclinations of man for woman and *vice versa* are satisfied in a lawful manner, and that the *principle of monogamy* has prevailed from the beginning.

In confirmation of this view it may be pointed out that the ceremonies connected with marriage in primitive society invariably refer to the union of the two individuals and not to groups. There can be little doubt but that the joining of hands, the placing of feathers, the exchange of fire-sticks, etc., have some inherent force, and constitute a form of sacramental marriage between two persons. It would be contrary to the evolutionary principle by which the world is governed, to find a perfect monogamous system in vogue in primitive society,

though the principle of monogamy is certainly discernible even in the Australian marital relations. In the full sense of the term the wife has only one husband, since the first husband enjoys conjugal rights superior to men who are in a totemic sense "one flesh" with the woman. In the case of supplementary unions the very fact that the husband's consent has to be obtained proves that a woman only has one proper husband, and that individual marriage exists though slightly modified. The greater number of polyandrous unions (the union of several husbands with one wife) are in Australia of the fraternal kind, and therefore the custom is softened in the direction of monogamy, since the wife belongs to a group of men united by the closest ties of blood. Again, the right of access to a woman exercised at the time of her marriage is simply a religious duty for removing the "danger" attached to the sacredness of sexual intercourse, rather than a survival of primeval promiscuity. As regards polygamy, it is almost unknown in the most primitive society, because hunting and fishing are the chief means of livelihood, and female labour has not the value that attaches to it when a man's wives can be employed in tending flocks, cultivating the fields, and performing handicrafts. As wealth increases the practice becomes more general,¹

¹ Cf. 1 Kings xi. 3. The threescore queens and fourscore concubines of *Songs of Solomon*, vi. 8 is a more probable estimate.

till, in a higher stage of culture still, it tends to give way to monogamy.

There is yet another reason for deciding against the theory of primitive promiscuity. It is not too much to say that the institution of marriage is founded on the requirements of man's nature. In all stages of culture it has been found that it is not good for man to be alone. As a mere individual he can hardly exist, and certainly cannot fulfil his purpose in the world. Man is, in the words of Aristotle, "naturally a civic animal." Some kind of community is necessary for him to live the fulness of his life, and therefore marriage is not an artificial regulation of civilized society, but a natural necessity in all ages of man's terrestrial history. Were the human species constituted as the lower animals, a merely passing union of the sexes would suffice ; but more than this is required. The offspring needs long continued care after birth. A parallel is, of course, to be found in some of the lower animals, but in a less degree. Child-bearing in the human organism continues for some time, while the elder children are growing to maturity, whereas in the other animals the young are usually independent of the mother before other offspring are born. The connexion of human parents is therefore indefinitely prolonged, extending beyond the age of child-bearing. As a consequence of this prolonged intimacy there appears the phenomenon

of human love apart from sexual desire. In the same way the parental and filial affections of the human species pass the bounds of mere devoted care, as seen in the case of the lower animals, which terminates with the period of protection.

Marriage, then, is the permanent connexion of man and woman, and as such it is natural in purpose, though religious and social in origin. It is sacred, being intended primarily to perpetuate life. Its secondary ends are the "mutual society, help and comfort that the one ought to have of the other both in prosperity and adversity," as well as a lawful remedy of concupiscence. But if marriage is "the permanent living together of man and woman" in a natural relationship¹—a statement in perfect accord with anthropological evidence as well as Christian tradition—it therefore follows that it is indissoluble. A momentary connexion suffices for the purposes of procreation, but the community spirit and the instincts of parentage and human love are all against a passing union of man and woman. "For this cause shall a man leave his father and mother and shall be joined unto his wife, and they two shall be one flesh," is the underlying *principle* of marital relations in all stages of culture. Our Lord revoked the dispensations granted in the Mosaic Law by assigning the origin of the union to the Divine

¹ Crawley, *Mystic Rose*, p. 319.

order of things and thus raised marriage to the dignity of a sacrament. This is again in accord with anthropological evidence, since marriage is founded on the requirements of man's nature, and, granting that man's nature was ordained by God, being natural it is Divinely ordered.

Christ was content to describe the beginning of the institution in the language of the Book of Genesis, probably because this was the only origin known to the Jews to whom He was speaking. He asserts that the union is in one flesh. "And they twain shall be one flesh, so then they are no more twain but one flesh." (St. Mark x. 6-9, St. Matt. xix. 4-6.) The result of such Divine joining is that man may not put it asunder. The Christian Church has therefore at all times upheld the sanctity of the marriage tie against the onslaught both of polygamy and divorce, maintaining throughout a pure monogamy, which is the only natural form of marriage. It is therefore the system which the race has approved at all stages of its development.

Westermarck has admirably summed up the whole situation by saying: "It is not, of course, impossible that, among some peoples, intercourse between the sexes may have been almost promiscuous. But there is not a shred of genuine evidence for the notion that promiscuity ever formed a general stage in the history of mankind. . . .

Although polygamy occurs among most existing peoples, and polyandry among some, monogamy is by far the most common form of human marriage. It was so among the ancient peoples of whom we have any direct knowledge. Monogamy is the form which is generally recognised and permitted. The great majority of peoples are, as a rule, monogamous, and other forms of marriage are usually modified in a monogamous direction. We may without hesitation assert that, if mankind advances in the same direction as hitherto ; if, consequently, the causes to which monogamy in the most progressive societies owes its origin continue to operate with constantly growing force ; if, especially, altruism increases, and the feeling of love becomes more refined and more exclusively directed to one—the laws of monogamy can never be changed, but must be followed much more strictly than they are now.”¹

¹ *History of Human Marriage*, pp. 133, 459, 510.

CHAPTER IV.

THE RELIGION OF PRIMEVAL MAN.

THE origin and evolution of religion runs on parallel lines with the origin and evolution of human society considered from a social and cultural standpoint. The precise origin of religion is a matter of considerable controversy. One school of anthropologists led by Sir James Frazer, who defines religion as "the propitiation of personal beings regarded as superior to man,"¹ maintains that an age of magic developed into an age of religion, the magician becoming the priest when "the fallacy of magic becomes more and more apparent to the acuter minds, and is slowly displaced by religion; the magician renouncing the attempt to control directly the processes of nature for the good of man, seeking to attain the same end indirectly by appealing to do for him what he no longer imagines he can do for himself."²

This theory, that originally man tried to control

¹ *Golden Bough*, 3rd ed. pt. 1, p. 222.

² *Early History of Kingship*, p. 127.

nature by using what he conceived to be immutable laws till, in process of time, the method proved a failure, and in consequence primeval man came to believe in the existence of divine powers whom he could not control, is simply stated, but it is by no means so easily shown to account for the whole body of primitive rites and beliefs. According to this hypothesis the Australians are still in an "age of magic," an assumption contradicted by the mere fact that they recognise a Supreme Being or All-Father who presides over their sacred ceremonies, and is such a "High" God that he has been found by missionaries a convenient means of presenting to the native mind some of the attributes of the Christian conception of the Deity. To justify the distinction between magic and religion, Frazer has been led to surround primitive man with all kinds of malignant spirits to account for the rise of protective magical rites in a godless era. Thus he has fallen into the fundamental error of assuming stages in the evolution of magic and religion as clearly defined as those exhibited by the geological record of the earth.

The more primitive cult is intensively studied the more apparent it becomes that magic and religion are so intermingled that the two aspects of "control" are found in the same rite. Even the medicine man in Australia is often initiated by the tribal god or by spirits, and, therefore, the

procedure is raised from the level of pure magic. This applies to most, if not to all, beneficent rites. The hypothesis that the human race has passed through a wholly non-religious era is therefore scarcely susceptible to historic proof. Dr. Marett's view that in the primitive conception of the supernatural there was the germ of both magic and religion which tended to become differentiated seems to be far more tenable, in the light of actual fact.¹ In the most primitive cult magic and religion are interfused. In process of development the one separated from the other, each going off on lines of its own. Magic, as well as religion, seems to be a thing of gradual growth. At first it gathered round ideas connected with *tabu*—the Polynesian word used by anthropologists to describe religious or magical prohibitions. With the rise of animistic beliefs and practices the magician became associated with the spirits of the dead, of animals and of evil spirits, but this does not necessarily imply that the anthropomorphic deity, so prevalent in primitive cult to-day, was evolved from a primeval belief in a divine animal or plant. In Australia gods are neither spirits of the dead nor deified divine animals. They are simply Supreme Beings—magnified non-natural

¹ Jevons' criticism of this view, in *Folk-Lore* (vol. xxviii. No. 3, Sept. 1917, pp. 259 ff.), should be considered, though the present writer inclines to Marett's theory.

men, often dwelling in the sky—who have never died.

To obviate such difficulties as would arise from the adoption of the Frazerian “stratification” theory, we shall use in this chapter (and elsewhere) the expression *magico-religious*. This term stands for a working hypothesis. In *Notes and Queries on Anthropology*—the *locus classicus* of anthropological definitions—it is stated that “the distinction between magic and religion, about which the framers of general theory are in dispute, may be ignored for purposes of particular description,” the phrase *magico-religious* sufficing to cover all the facts relating to magical, religious, and quasi-magico-religious rites, beliefs, and customs.¹

Another school of anthropologists follow the late Sir Edward Tylor in seeking the origin of religion in “the belief in spiritual beings,”² that is to say, of “spirits” in the wide sense that includes souls. This theory asserts that the prototype of soul and spirit is to be sought especially in the “dream-double” and “trance-double,” that “vaporous materiality,” as Dr. Tylor describes it, that is suggested by psychological experiences, such as dreams, trances, shadows, hallucinations, breath, sleep, death, etc. There is no doubt that the phantasm plays a considerable part in primitive religion. Savages have vivid

¹ p. 251.

² *Primitive Culture*, i. p. 424.

dreams, see ghosts, and are subject to hallucinations, and thus the phantasm is a connecting link between the material and the spiritual planes of being. But by animism Tylor means not only the belief in spiritual beings but also "a general animation of nature." Now there is no reason to suppose that primitive man attributes anything phantasmal to a running stream, a peculiar tree, or a heavenly body, yet he often regards such natural objects as sacred.

Again, it is obvious that the Tylorian doctrine of animism cannot account for all religious and magico-religious practices among primitive people. The anthropomorphic deity is not included in this hypothesis any more than in Frazer's stratification theory. Primitive religion must be represented by something vaguer and wider, resembling more the conception set forth by the Melanesian word *Mana*, a generic name for the mystic influence which fills certain sacred things. "It is a power or influence," says Codrington, "not physical, and in a way supernatural; but it shows itself in physical force, or in any kind of power or excellency which a man possesses. This mana is not fixed in anything, and can be conveyed in almost anything; but spirits, whether disembodied souls or supernatural beings, have it, and can impart it, and it essentially belongs to personal beings to originate it, though it may act through the medium

of water, or a stone or a bone.”¹ This wonderful supernatural power gives success in war, makes pigs multiply, gardens become productive, nets catch fish, and arrows inflict mortal wounds.² The ultimate source of mana is in “personal beings.” Codrington includes living men in this category, but since mana is something supernatural, it must pre-eminently belong to supernatural personalities such as ghosts or spirits. From these it may be communicated to any animate or inanimate object. But although its ultimate source is in conceptions of spirit or ghost, in practice it covers all cases of magico-religious efficacy either automatic or proceeding from a spiritual being.

Any startling manifestation of nature, a curiously shaped rock, animals of uncanny appearance, a dead body, a mighty chief, a rushing stream, etc., is conceived as having mana, and in consequence rites and tabus grow up around it. All things having about them this mysterious energy are regarded as sacred quite apart from their being the abode of a spiritual being. This force may be called “god,” as it is by the people of Madagascar.³ So, too, the Masai and Akikuyu conception of Deity is equally vague. Anything that is to them incomprehensible or peculiar is

¹ *Melanesians*, p. 119 n.

² *Op. cit.* p. 120.

³ W. Ellis, *History of Madagascar*, i. pp. 391 f.

ngai (god),¹ just as among the Algonquin it is *manitou*, or *orenda* to the Iroquoian. Not dissimilar is the conception of *mulungu* among the Yaos, east of Lake Nyassa. This term signifies the "Great One" and is equivalent to god, although to the native mind it does not convey the notion of personality. It denotes rather an inherent supernatural energy associated with such mysterious objects as the rainbow, a sacred tree, etc. In Morocco the Arabs designate the mystic force connected with "holy" people and places as *baraka*.² The term is also used to describe "sacredness" in general. Thus, for instance, a bride or a rain-maker is said to have *baraka*.³

The conception of *mana* is, therefore, by no means confined to Melanesia. It is rather a world-wide aspect of primitive cult. Around it gather all the fundamental principles of savage religion. It is sufficiently vague to describe those early religious ideas before the conception of personality enters into the primeval consciousness, and yet it is also connected with a belief in spiritual and anthropomorphic beings. That this attitude of mind, called by Dr. Marett *animatism*, is *psychologically* an earlier phase than animism, is shown by the case of the Trojan offerings to a sacred river,

¹ Thomson, *Masailand*, p. 445.

² Westermarck.

³ Cf. *Primitive Ritual and Belief*, pp. 225 f.

narrated by Homer. Originally the Trojans regarded the river as containing mana, and, in consequence, they sacrificed a bull to the stream. The animal was thrown into the water whole and entire. In later times, when they had reached an animistic stage, an altar was erected by the side of the river on which a bull was offered, the belief being that the *spirit* in the water came out and consumed the essence of the sacrifice.

It must not be assumed, however, that there was, in primeval days, a stratigraphical evolution from animatism to animism. As a matter of fact animatism, animism, and anthropomorphism constantly exist side by side, and therefore presumably they may be supposed to have arisen simultaneously as an explanation of many different phenomena. Animatism originally may have been applied to non-human objects, whereas animism may have arisen by way of explanation of such phenomena as dreams, hallucinations, trance, sickness, death, reflections in water, shadows, etc. On the other hand, anthropomorphism did not evolve out of animistic conceptions. In Australia All-Fathers are neither animistic nor even animatistic in character. They are conceived of as magnified non-natural men, often dwelling in the sky—supermen who have never died. The origin of these truly religious ideas may reasonably be sought in such awe-inspiring events as thunderstorms,

calculated to suggest the existence of an external supernatural being. This threefold origin of religious phenomena—animatism having reference to non-human objects containing mana, animism arising by way of explanation of the mental nature of man, and anthropomorphism as the result of the spiritual and theistic yearnings of the human soul, seeking a supernatural Creator of nature *outside* the world—seem to us a possible and reasonable explanation of the magico-religious beliefs and customs, at any rate among modern people in a primitive state of culture.

Before passing on to the consideration of the light thrown on the religion of primeval man by archaeological evidence, we must remind the reader that the primitive mind is incapable of abstraction, and, therefore, any search for an organized *theology* either in ancient or modern representatives of Palaeolithic man will be in vain. Certain things, animals, places, and persons are *sacred* because they are endowed with mana, and therefore they are hedged round with tabus, and rites have, in consequence, to be duly performed. The ritual acts in course of time become more and more elaborate, and mythology grows up to explain the ceremonies. But spiritual religion, as practised in the higher systems, is unknown in primitive cult. *To the savage religion is but a series of ritual acts, a routine of worship*, except, perhaps, as regards certain aspects of the All-Father belief.

Nevertheless, primitive man is a distinctly religious person, and his ritual is not mere ceremony, since it is performed for the specific purpose of bringing him into contact with the supernatural or sacred world. Thus, primitive religion may be described as the attitude towards, perhaps the exploitation of the sacred, embodied in attempts to come into beneficial contact with it and appropriate to himself as much as possible of its transferable force by various ritual acts, while safe-guarding himself from its dangerous and excessive manifestations.

These beliefs and practices lie at the root alike of religion and of magic; they constitute the magico-religious attitude, out of which both magic and religion are to be differentiated. To define the special line of development which constitutes religion is not easy. From one point of view it might be said that the *recognition of mana from without leads to religion, while the consciousness of mana from within leads to magic*. But there is a constant fusion of the two, if only because man is always seeking to reinforce his own mana by the virtue of every sacred, mysterious, and wonder-working object which seems to him to possess it.

In attempting to unravel, in some measure, the mystery of the religion of primeval man we shall work on the lines adopted in the last chapter, endeavouring to interpret the archaeological

evidence from the culture-remains of Pleistocene times, by the aid of the researches of anthropologists among the Australians and other primitive people living under conditions similar to those prevailing in Europe in the Palaeolithic epoch.

Formerly it had been generally supposed that primeval man had no religion, because among the relics disinterred on the inhabited sites no materials were found which suggested funerary rites. But a fresh interpretation of the sepulchral phenomena associated with some of the skeletons from Palaeolithic sites leave little doubt that in those far-off days man realised that he was composed of two separate entities—body and soul—the latter passing on to the world of spirits after somatic death. On August 3rd, 1907, a grave was discovered at La Chapelle aux Saints in which the skeleton lay on its back from east to west. Around it were a quantity of Mousterian flints, fragments of red ochre and broken bones, while over the head were several long bones lying flat, one of them still in connexion with some smaller bones of the foot and toes, so as to suggest that it was still clothed with flesh when it was placed in this position. This was evidently a ceremonial interment, accompanied by offerings of food and implements for the use of the deceased in the spirit world.¹

¹ *L'Anthropologie*, 1913, xxiv. pp. 609-634. Cf. *Ancient Hunters*, pp. 180-181.

On March 7th, 1909, another Palaeolithic interment was found in the rock-shelter of Le Moustier. The body—that of a youth about sixteen years of age—lay on its right side with the right arm bent so as to support the head on a pillow of flints, and the left arm extended. Within easy reach of the latter lay a magnificent oval-shaped implement, worked on both sides, and a little farther on a flint scraper. About the skull were disposed burnt bones and flints, suggesting the remains of a funeral feast. Dr. Klaatsch, the expert who examined the interment, came to the conclusion that the individual to whom the skeleton belonged had been ceremonially buried. The fact that these interments with funeral rites have been so circumstantially carried out, suggests that they were founded on an already established cult of the dead. Furthermore, the placing of weapons, food offerings, etc., in the grave can only be explained on the ground that they were so arranged for the use of the soul in the spirit world. If it can be proved that the interment at Galley Hill is really of early Palaeolithic antiquity, it will then be shown that man, at the very beginning of the Pleistocene period practised rites which point to his having a somewhat definite conception of a life after death.

The skeletons found in the Aurignacian Caves at Mentone supply additional evidence for the assumption that funeral rites were practised in the

Palaeolithic age. Here, again, implements and red ochre were buried with the bodies. In some cases the interment was made over a hearth, in others in a grave or rudimentary tomb, made by placing flat stones on edge for the wall, and roofing it over with larger slabs. The skeletons, all of which show Cro-Magnon features, were adorned with a necklace made of the teeth of deer, vertebrae of fish and carved pendants. No doubt these adornments were part of the burial rites. The Magdalenian remains found at Laugine-Basse and the Azilian site at Ofnet show that similar customs were in use at the close of the Palaeolithic age. At Ofnet twenty-seven skulls were orientated in the same direction, looking towards the setting sun.

When these prehistoric interments are compared with the funeral rites of the Bushmen, the conclusion that Palaeolithic man believed in a life after death is placed beyond doubt. Among these primitive people the body of the deceased is painted with red ochre and grease, and buried facing the east. His bow and arrow—corresponding to the flint implements found in Palaeolithic interments—is laid by his side.

In Neolithic times the evidence for ceremonial interments is overwhelming. In the kitchen middens of Mugem, in Spain, no less than a hundred interments were found at different levels in the

shell mounds, although grave-furniture does not appear to have been associated with them. In later Neolithic times the Megalithic culture grew up, as an outcome of simple inhumation (*i.e.* placing a body in a hole in the earth, and covering it over with soil). In this very early form of burial the spot was marked by an earth mound or by stones.¹ Subsequently the grave was lined with stones over which a large capstone was placed by way of protection. Thus came into being the cist, the most widely distributed type of early grave known. From this to the megalithic monument, with its separate chambers, entrance passage, and cairn, was an easy transition. But the erection of the elaborately constructed chambered cairn was not merely a matter of respect for the deceased. The general view of archaeologists is that the grave was regarded as the temporary abode of the soul till the body had become completely decomposed, and thus it constituted an intermediate state between earth and the spirit-world. From very early times fire was looked upon as a purifying agent (which probably accounts for the numerous partially burnt bodies found in graves long before cremation was generally adopted), and therefore in due course cremation became a religious cult,

¹ Burial mounds are called "cairns" when they are made of small stones, and "barrows" when the material is soil. It often happens that a small cairn is found inside a barrow.

since the practice was thought not only to purify the soul but also to speedily set it free from its fleshy entanglement.

The Long Barrows of the North of England show that an elaborate system of cremation was adopted in Yorkshire and Westmoreland, while in Wiltshire and Gloucestershire unburnt burials prevail. In the Bronze Age both burnt and unburnt remains are found in barrows that are circular and more or less conical ; an instance may be quoted in which the circumstances show that both methods were resorted to on occasions ; as, for example, in a mound excavated in 1849 on Acklam Wold, Yorkshire. In it were found a pile of burnt bones in close contact with the legs of a skeleton buried in the usual contracted position. It seems to have been deposited while yet hot, for the knees of the skeleton were completely charred. It has been suggested that in cases like this, or where an unburnt body is surrounded by a ring of urn-burials, the entire skeletons may be those of chiefs or heads of families, and the burnt bones those of slaves, dependants, or even wives, sacrificed at the funeral.¹

When the corpse was burnt the ashes were carefully collected in an urn and buried, either in the earth or in a prepared grave. Sometimes the incinerated remains were laid in heaps in a barrow

¹ Brit. Mus. *Guide to Bronze Age Antiq.* p. 16.

or other sacred place. Cremation led to a considerable reduction in the size of the grave, since the body was reduced to a few ashes, and thus megalithic chambers may have given place to stone-lined cists. The large chambered cairns in Britain were generally the burial places of the earlier dolichocephalic race, except in the Yorkshire barrows where this race was mixed with the later brachycephals.

The barrows of the earlier part of the Neolithic period are usually known in England as "long barrows," to distinguish them from the "round barrows," which belong to a succeeding time, although no hard and fast rule can be laid down as to the chronological sequence of earth mounds. These elongated graves are commonest in Wiltshire, Dorsetshire, Somersetshire, and Gloucestershire. A few exist elsewhere, but they are by no means of such frequent occurrence in Britain as those of circular shape. Some contain no chamber, while others contain a structure of the megalithic type. There is, however, one common feature in all long barrows wherever they are found, viz., that no traces of metal, with possibly the exception of gold, have ever been discovered in them. There is also a similarity of burial custom, but the skulls clearly show that this does not prove identity of race, as was formerly supposed. Also in the succeeding round barrows metal seldom occurs, and

when it is found, the type always indicates the earliest phases of the Bronze Age. Moreover, the pottery of the barrows belong to the Neolithic period. It is therefore evident that the vast majority of the barrows must be assigned to the Stone Age.

Chambered long barrows are most frequent in the neighbourhood of Wiltshire. The megalithic chambers within the mound are of three types. In the first there is the central gallery entering the mound and leading to a chamber or chambers formed of large slabs set on edge. The roof is made by laying large slabs across the tops of the sides. When there is no central corridor, the chambers are so arranged as to open outwards on the edge of the mound. Where the chamber is not connected with the outside, the barrow is composed of a series of cists or small dolmens within the mound. A megalithic monument may therefore be described as a building made of large stones, or, in some cases, a single rough stone pillar (called a *menhir*) with its base fixed into the ground.

Megaliths for the most part belong to the Neolithic period and part of the Copper and Bronze Ages, although their exact age, like the precise purpose for which they were erected, has never been definitely settled. Until recently megalithic remains were thought to be burial places of mighty chiefs, or temples used by the Druids. Numerous

legends have collected round these monuments; thus, for example, the Penrith circle is known by the local peasants as "Meg and her daughters," and a dolmen in Berkshire near the "white horse" is called "Wayland Smith's Cave," while the menhir in the Orkney Isles is termed "Odin's Stone." Dolmens (megaliths consisting of two or more upright stones standing a short distance apart, supporting a roofing stone, called a capstone) are usually regarded as houses of dwarfs, caves of fairies, or forges of the devil, while menhirs are the arrows and cromlechs (stone circles) the cauldrons of his satanic majesty. Megaliths are sometimes associated with saints in France, and King Arthur in England. The circle at Penrith, according to one legend, is the round table of the latter, and a dolmen in Wales is thought to be his quoit. The *allées couvertes* (or long rectangular gallery leading to or taking the place of a chamber) of Arles are called shops of the Saracens, and dolmens in India are often thought to be stones of the monkeys. Even to this day megaliths are looked upon by the credulous as sacred, and therefore dangerous. Peasants in France will not shelter under them, nor go near them at night. A dolmen at Finistère is said to cure rheumatism in anyone who rubs against the loftiest of its stones, and another heals fever patients who sleep under it. Oaths sworn near a megalith in Scotland are

supposed to have a peculiar sanctity. On the Berkshire Downs when a horse casts a shoe near "Wayland Smith's Cave" the rider must leave it before the dolmen, placing a coin on the capstone. He then withdraws. On his returning to the spot he finds the horse shod and the money gone! ¹

In 1898 the British Association investigated "stone circles" with a view to ascertaining their age. Operations were begun at the cromlech at Arbor Low (Derbyshire) with the result that the erection was assigned to the Neolithic period. Dr. Gowland shortly afterwards carried out investigations at Stonehenge, and, in a paper before the Society of Antiquaries on his recent excavations, came to the conclusion that the structure was a temple dedicated to the worship of the sun, and assigned its erection to the end of the Neolithic period on the ground that no traces of metal implements were found during his explorations (Dec. 19, 1901.)² It does not necessarily follow, however, from the fact that only flint implements were discovered in association with the monolith examined that the monument was erected prior to the Metal Age, as Neolithic implements of the type found at Stonehenge (mostly axes) survived long into the Bronze Age. The archaeological evidence suggesting a late Neolithic antiquity to

¹ T. E. Peet, *Rough Stone Monuments*, p. 10 ff.

² *Archaeologia*, lviii. pt. 1.

the megalith is strengthened by the astronomical experiments carried out by Sir Norman Lockyer, which try to prove that on Midsummer Day, 1680 B.C., the sun would rise over the summit of the upright stone called the "Friar's Heel."¹ This theory has been severely criticised by Mr. Hinks, who points out that the direction chosen for the avenue leading up to the Friar's Heel is purely arbitrary, since the bench-mark he fixed on Sidbury Hill has no connexion with Stonehenge.² Although the dating of monuments on the evidence of "observation lines" for determining certain movements of the sun involves much conjecture lacking in proof, yet, taken in conjunction with the more definite archaeological data, it is not to be despised, since there can be little doubt that the megalithic builders were influenced by a solar cult. What the nature of the worship carried on in megaliths was it is quite impossible to determine, but that they were temples dedicated to the sun or to other of the heavenly bodies seems to be highly probable. The frequency with which menhirs occur in a north-easterly direction suggests the watching of solar phenomena.³

We therefore conclude that Stonehenge, like most other megalithic monuments, was erected

¹ *Nature*, Nov. 21, 1901.

² *Nineteenth Century*, June 1903, pp. 1002 f.

³ Cf. Peet, *op. cit.* p. 29.

at the end of the Neolithic or possibly at the very beginning of the Bronze Age, and that very probably it was a temple dedicated to the sun. The occurrence of a stain of copper oxide on a worked block of stone at a depth of seven feet does not necessarily suggest the presence of bronze, as the stain may have been caused by the disintegration of malachite and not of metallic copper. It is most unlikely that such quantities of flint implements and no bronze or copper tools should be found if the remains were erected in the Bronze Age.

As England is the home of the stone circle or cromlech, so France is the home of the dolmen. Some of the latter we have seen were covered under a mound of earth, thus forming chambered barrows. Exactly how the capstone was put into position is not known, it being not infrequently of great weight. That at Ballymascanlan, County Louth, for instance, weighs as much as sixty tons. The Egyptian monuments furnish us with an indication of the methods adopted in moving large stones to the required spot. The pictures at the tomb of Tahutihotep at El Bershah may be taken as an example. A rough road of beams is represented as laid in the required direction, on which rollers are placed under the stone. Ropes are attached to the rollers, and oxen, with the assistance of men, drag the stone along. In the seventeenth century the castle of Osaka in Japan

was erected on megalithic lines, by dragging huge stones (one of which weighed 160 tons) on rude wooden rollers. Another method is suggested by Peet. A gentle slope is erected on to which the stone is gradually hoisted by means of levers resting on beams or stones as fulchra, while other men fill up the space beneath it with earth and stones. This process is repeated till the stone is level with the top of the slope of hard earth covered with wet clay. On to this it is then slipped, and allowed to slide down the inclined plain. A fresh slope is then built, and the whole procedure repeated.¹ The upright stones could then be placed in position by ropes and levers, and the capstone placed on top by erecting further slopes against the uprights, along which the slab could be moved by rollers. This ingenious suggestion seems to be reasonable and probable.

The size of dolmens varies considerably, ranging from the simplest form, as represented by the well-known example at Kits' Coty House between Maidstone and Rochester in Kent, which consists of three upright stones supporting a capstone 11 feet by 8 feet, to the huge structures known as Giant's Graves or *Allée Couvertes*. La Roche aux Fées near Esse, may be taken as an example of an *Allée Couverte*. It consists of no less than thirty supports, covered by eight capstones. Another

¹ *Rough Stone Monuments*, pp. 8 f.

monument about the same length is the Dolmen of Bagneux, near the town of Saumur, which is constructed of huge flagstones—four in number on each side—and four capstones.¹

No less than 4000 dolmens are to be found in France, of which 618 are in Brittany. They are fairly abundant in North Germany, Spain, and through Portugal to Andalusia ; in Denmark and in the South of Sweden. The culture appears to reach England by way of the Channel Islands—Jersey contains several examples, and Guernsey is even more prolific. In the British Isles dolmens are more common in the west country—Cornwall, Wales, the Isle of Man, Ireland and Scotland. Sepulchral remains do not exist in Central Europe, but reappear in North Africa from Tripoli to Morocco, passing Eastwards through Persia, Syria and Palestine to India, Australia, Polynesia, Madagascar, Peru, etc. The manner of distribution of this type of megalithic monument has led to the theory of the existence of a migratory race known as “the People of the Dolmens,” moving from Scandinavia in a southerly direction to Africa. Others would reverse the direction, while Mr. Leeds of Oxford finds the original home of the dolmen culture in France.

For some years Professor G. Elliot Smith has been trying to show that the distribution of these

¹ R. Munro, *Encyc. Brit.*, art. “Stone Monuments.”

megalithic monuments can be reduced to a single origin. A study of mummification in Torres Straits suggested a marked resemblance to the process employed in Egypt in the XXI Dynasty. From this and other indications he concludes that migrations which carried eastwards megaliths, mummification and the allied customs (circumcision, incision, tattooing, artificial deformation, the boomerang, the couvade, the deluge myth, and serpent-worship, called collectively the "Heliolithic"¹ culture-complex) set out from Egypt about 800 B.C. in pursuit of wealth. He cites evidence from several writers that about this time India and China were in a state of development, which he attributes to migrations from Egypt. By the year 900 B.C. he thinks that practically the whole complex structure had become built up and definitely conventionalized in the country, with numerous purely accidental additions from neighbouring lands. The great migration of the heliolithic culture, according to this theory, began shortly before 800 B.C. and is ascribed to the Phœnicians. Up to 800 B.C. these interesting people had, it is implied, limited their wanderings to the Mediterranean, the Red Sea, the Persian Gulf, and India. After receiving from Egypt the art of erecting megaliths and some of the allied culture, they

¹ The culture is labelled "Heliolithic" because of the association of megalithic monuments with sun-worship.

proceeded to East and West Africa, and along the coast-lands of Asia to India, China, Japan, the Pacific, and to America. The culture reached the Persian Gulf strongly tainted with the influence of North Syria and Asia Minor, and by the time it reached the West Coast of India and Ceylon (about the eighth century B.C.) it had taken over Mediterranean, Anatolian and Babylonian accretions, with East African modifications. These Ethiopian influences became more pronounced in Indonesia, because in India and the west the disturbances created by other cults have destroyed most of the evidence. From Indonesia the heliolithic culture-complex passed into the Pacific and eventually reached the American Coast in the neighbourhood of Peru and Mexico.¹

The proof of this migration, according to Professor Elliot Smith, lies in the mass of associated customs in the lands thus visited. He denies altogether the possibility that cultural resemblances may be due to the common tendencies of the human mind called into play by similar conditions. He is content to chart out on rough maps the distribution of ten associated customs to mark the path of the dolmen builders after their migration from the original centre. The researches of Dr. Rivers, Mr. Perry, and other anthropologists suggest the propagation of culture far out in the Pacific, and

¹ *The Migrations of Early Culture.*

perhaps across it, such as was probably associated with the building of megalithic monuments similar in type to those that are known in Europe. Prof. Elliot Smith has certainly made out a fairly strong case for a relation between the dolmens of Western Europe and the megalithic culture of ancient Egypt. He has also shown with no small measure of success that the practice of mummification accompanied the setting up of megaliths as the culture proceeded eastwards. The natives of Torres Straits, for example, mummified their dead by processes resembling those of the XXI Dynasty in Egypt. It is, perhaps, to be regretted that, in the present state of our knowledge, he did not stop at this point till such time as the unaccountable gaps in the allied customs can be filled up. However, the monograph only professes to be a foreword to a more elaborate treatise to be put forth when Professor Elliot Smith and his collaborators have collected further proofs of the migration of the culture-complex. Pending the production of a full statement of the evidence the hypothesis may be regarded as legitimate and plausible, though in a somewhat nebulous state at present.

It seems evident that megalithic architecture was due to culture contact, since the monuments present a uniformity of structure hardly compatible with a theory of independent origin.

Again, it is difficult to explain the fact that they are confined to the coast-lands, except on the supposition that they were erected by a migratory race at the end of the Neolithic period and early in the Bronze Age. Could it be that so widespread and homogeneous a system arose simultaneously unless it were spread by a single race from a single centre? True, it is no uncommon thing to find customs passed on from one people to another as a result of culture contact, especially if something was to be gained by the adoption of a new custom. Thus the use of metal, amber and enamel spread along definite trade routes in the Iron Age, and many arts and appliances have been distributed over widely separated areas in a similar manner. But primitive man, though not slow to adopt new practices that will make for his pecuniary enhancement, is by no means ready to in any way alter his religious rites and beliefs. It is, therefore, highly improbable that the introduction of megaliths and their associated rites were due to culture contact.

Bearing these facts in mind, and remembering at the same time the similarity in structure and the date of erection, there seems good reason to suppose that the megalithic monuments represent the work of one race. The objection to this conclusion raised by Déchelette that the skulls found in the tombs do not present a uniformity of type

overlooks the fact that on a long migration racial intermixture and consequently variation in features is almost sure to take place. At the same time there is a marked similarity in physical type among the people of the dolmens. Nevertheless, to grant the probability of the megalithic culture representing the work of a single race in a series of migrations is by no means the same thing as setting forth a cut and dried scheme of the distribution of a culture-complex, with unaccountable gaps in the allied customs, after the manner of Elliot Smith. The hypothesis, as far as it concerns the megalithic culture (and perhaps also mummification) is, we venture to think, sound as a general principle, but the details, as to how, when, and where the transmission took place can only be decided when sufficient data is forthcoming to supply the many deficiencies.

The precise significance of the megalithic monuments is by no means easy to decipher, and various theories have been put forth to explain their origin and purpose. They have been described as Druidical and solar temples, places of sacrifice, religious or commemorative monuments and sepulchres. That most of the smaller cromlechs have been used as sepulchres has been proved by the finding of urns and burnt bones in association with human remains. At the same time it is difficult to believe that burial was the sole purpose of the large

cromlechs such as Stonehenge, Avebury, etc. It seems highly probable that by the end of the Neolithic Age a complex cult of the dead had arisen, and that these large cromlechs represent religious monuments erected near the graves of deified heroes, and were used for the performance of the ceremonies of the cult. Exactly what were the rites and beliefs of Neolithic man regarding life after death it is impossible to say, but evidently they involved a quasi-materialistic conception of the continued existence of the soul in the spirit-world, and the intercourse of mankind with the supernatural planes of being. The grave-goods, consisting of weapons, ornaments, the remains of food, human beings (presumably the wife or slave of the deceased) and animals, found in Neolithic interments, show that the people of those times did not regard life beyond the grave as differing widely from that on earth. To them death was the gate to a more perfect state of existence—the blessed company of departed heroes and friends—to which they looked forward with hopeful anticipation. Therefore, since the spirit-world was superior to this transient life, the abodes of the dead were considered of greater importance than those of the living. In the Neolithic period they were constructed of durable material, as we have seen in the case of the megaliths and pyramids of Egypt, and often placed on high ground so as

to form an enduring and prominent memorial for many generations.

Having briefly considered some aspects of the eschatology of primeval man, it remains to examine the evidence at our disposal of the existence of other rudimentary conceptions of religion amongst the earliest inhabitants of Europe. It is to the Palaeolithic caves of France and Spain that we again turn for traces of primeval cult. First of all we will wend our way towards a valley in the Pyrenees near Tasascon-sur-Ariège, in which is situated the mile-long subterranean picture gallery known as the cave of Niaux. Here amid stalactites and stalagmites that remind the Britisher of the home of Cheddar Man in the Mendips, the walls are found to be decorated with curious marks, apparently made with black oxide of manganese and red ochre, leading up to a projecting ridge of the rock, cleverly shaped into a bison in its last agonies. The imagery is completed by the addition of a red dot on the flank, which indicates the wound that is proving fatal. The other marks are presumably meant to signify the throwing-club or boomerangs that are to deal the deadly blow.

Penetrating farther into the recesses, we come upon the drawing of a horse outlined in thick black manganese, standing out prominently despite the fact that other works of art surround and

trespass upon the picture. The only satisfactory explanation that can be offered to account for the crowding and overlapping of animal designs in this particular corner of the cave is that given by Dr. Marett in his delightful article *In a Prehistoric Sanctuary*,¹ that there was more mystic virtue, more mana, attaching to one spot than to another. Thus, for instance, the projecting ridge on the wall which was to represent a bison would at once suggest sacredness to the primeval mind, by reason of its natural similarity to the animal's body.

Again, a little farther on to the left, sheltered by an overhanging ledge, two trout are traced on the sand, similar to those now living in Ariège; and near by, likewise sheltered by a ledge, the imprint of the naked foot of a man—perhaps left by the Aurignacian artist himself—is plainly visible on the stalagmited floor.

Now why should Palaeolithic man draw outlines of animals and fish in the dark recesses of a mountain if it were not that this particular cave was a "prehistoric sanctuary"? Surely, if he were merely gratifying his æsthetic tastes he would have chosen a place open to the light of day, where he and his companions might enjoy the fruits of their labours. It seems much more reasonable to follow Dr. Marett in regarding the cave at Niaux

¹ *Hibbert Journal*, Jan. 1910, and *The Threshold of Religion*, pp. 203-220.

as a sacred spot wherein primeval mysteries were duly celebrated, and which had to be approached with solemn and esoteric rites. This conclusion is supported by the evidence from the Aurignacian rock-shelter at Gargas, near Aventignon, in the valley of the Neste.

Here we are amongst the pioneers of Aurignacian art, and therefore we must not expect to find such finished workmanship. A side-face outline of a bison, for instance, is given two horns, and horses are represented as devoid of legs, etc. Such pictures undoubtedly admirably meet the requirements of magic or rudimentary religion, but they are hardly satisfactory from the artistic standpoint.

A further examination of the walls of this cave reveal a truly shocking spectacle. In 1906 M. Regnault noticed designs of hands stencilled in red or black in dark recesses near the entrance. These observations were confirmed by MM. Cartailhac and Breuil in the following year. About 150 of these designs have now been discovered, in some instances very well preserved owing to their being covered with a thin layer of stalagmite. In some cases all the fingers, including the thumbs, have lost their first two joints, in a manner that presents a striking similarity to ceremonial mutilations practised to-day by the Bushmen, Australians, and the American Indians of Arizona and Nicaragua. Professor Sollas has shown that the appearance

of amputation can be obtained without proceeding to that extreme.¹ The coloured powder may have been thrown in such a manner as to stencil out the joints in question, in which case it must be assumed that the Aurignacians had already passed through the stage in which their cult demanded the sacrifice of the actual finger, and had arrived at the notion of symbolic representation. A more plausible explanation of this deformity is that these fingers represent hands which have been mutilated by cutting off the terminal joints, as is customary among such savage tribes as the Mafulu of New Guinea. In any case, the hands at Gargas show that the practice of ceremonial mutilation was in existence in Aurignacian times, and, judging from the analogy of modern primitive people, the custom was of magico-religious, and possibly of sacrificial significance.

In concluding this brief survey of the "prehistoric sanctuary" at Gargas, it may be well to call attention to Dr. Marett's suggestion that the curious interlacings and arabesques made by the fingers or some pointed instrument in the gluey clay of the walls and roof of the cave, are imitations of the scratches left by the claws of the cave-bear—the *totem* of these particular Aurignacians.² In support of this view may be

¹ *Ancient Hunters*, pp. 354-358.

² Cf. *L'Anthropologie*, xxi. pp. 139, 142.

mentioned the numerous deep striae on the walls of the cave of Font-de-Gaume. On the floor of this latter cavern a great many bones of the cave-bear have been found, as well as striae corresponding to the rows of claws on the bear's foot, and the red outline drawing of the animal at the end of the gallery. Of course this is slender evidence upon which to base the assumption that Palaeolithic man practised totemism, but taken in conjunction with the cave-paintings representing animals and designs similar to the totemic decorations on Churinga, etc., it seems highly probable that these primeval inhabitants of Europe were acquainted with this primitive mode of social and religious organization. The ornamentation of the so-called "Batons de Commandement" made out of the antlers of the reindeer or stag suggests totemic significance, and the painted pebbles found by M. Piette at Mas d'Azil bear an almost unmistakable likeness to the totemic designs on the Churinga of the Arunta.¹

In many parts of Australia the natives have engraved on rocks and painted in caves figures of men and animals, stencilled designs of hands in a white and red ground, and ornamented their implements and weapons with engraved and coloured lines bearing a striking resemblance to

¹ Cf. the author's article "Staff" in Hastings' *Encyclop. Religion and Ethics*.

those discovered in Palaeolithic caves. The unsuitability for habitation of the inner recesses of these caverns is obvious. The conclusion is therefore inevitable that the paintings relegated to the dimmest parts of the caves, at the end of long corridors, were executed for religious rather than for artistic reasons. If the caves in question are not prehistoric sanctuaries, how can the fact be explained that in the grotto of Les Eyzies—a site near Font-de-Gaume known to have been inhabited at the end of the Palaeolithic—there is an entire absence of such designs? The only inference that can be drawn from these facts is that artists lived at Les Eyzies, and took their implements and materials to Font-de-Gaume for the purpose of decorating the walls. Each group of animals when completed was apparently connected with some special totemic ceremonies for the performance of which the members of the tribe resorted to the sanctuary.¹

What was the nature of the rites practised by the cave-dwellers of the Reindeer Age? We have already shown that there is reason to suppose that primeval man performed ceremonies corresponding to the Intichiuma rites of the Australians to increase his food supply. The same artistic concept found among the men of the later Palaeolithic epoch is set forth in the Australian caves and on rocks in

¹ Cf. E. A. Parkyn, *Prehistoric Art*, pp. 118 ff.

connexion with totemic ritual.¹ In Australia, in a great many instances, the designs are traced on walls of rock in places that are tabu to women and the uninitiated. Likewise in the Palaeolithic caves the paintings are relegated to the innermost recesses—presumably holy ground upon which the profane are forbidden to tread. There is, therefore, a close analogy between these Australian rites and the ritual deducible from the cave paintings of the Aurignacian and Magdalenian periods. Consequently the cave-men, like the Arunta, used the designs as objects of a cult in which not only the food supply was increased, but also a sacramental relationship was established with the whole totemic species. A brief description of the Australian totemic rites, as noted by Messrs. Spencer and Gillen, may therefore be given as a probable account of the kind of ceremonies performed in prehistoric sanctuaries. Of course it is not suggested that the totemic cult of modern aborigines is in any way *identical* with that of primeval man; but, judging from the numerous similarities between the two cultures, the Arunta rites appear to represent the nearest approach to the totemic mysteries celebrated by Palaeolithic man at Gargas, etc.

We have already described the Intichiuma ceremonies held in the spring at the foot of a rock

¹ *Native Tribes*, pp. 614 ff.

on which great pictures of the witchetty grub are painted. We will now turn to the rites performed *after Intichiuma* (i.e. at the period analogous to harvest time among agricultural people) when the totems are plentiful, and when the need for productive ceremonies no longer exists. Then it is that, in the witchetty grub totem, large supplies of the tabu grub are gathered and brought into the camp, where they are cooked and stored away in *pitchis*. In due course they are taken to the men's camp, where all the men assemble. The leader grinds up the contents of the pitchi between two stones. Then he and the other men of the totem eat a little, and distribute that which remains to those who do not belong to the totem. He repeats the operation with a pitchi from his own store. The witchetty grub totem may then eat sparingly of the grub.¹

Similar ceremonies take place in other totems in Central Australia, as, for example, the Undiara Kangaroo. In this group, when an Intichiuma ceremony is to be performed, the men proceed to the foot of a hill, on the slope of which two blocks of stone project one above the other. One of these stones is supposed to represent a male kangaroo, the other a female kangaroo. The head man of the totem clan with a man who is in the relation of mother's uncle to him climbs up a rocky ledge,

¹ *Native Tribes*, p. 203.

supposed to be haunted by the spirits of ancestral kangaroos, and paints it with strips of red and white to indicate the red fur and white bones of the kangaroo. When this is done a certain number of the young men sit on the top of the ledge, while the men below sing of the increase of the kangaroos. Blood letting follows. "The men open veins in their arms and allow the blood to stream out on to and over the ledge of the sacred ceremonial stone which represents the spot where a celebrated kangaroo of the Alcheringa went down into the earth, its spirit part remaining in the stone which arose to mark the place."¹ According to Spencer and Gillen, the purpose of the ceremonies is to drive out in all directions the spirits of the kangaroos, and so to increase the numbers of the animals.² Strehlow, however, maintains that the rite makes real kangaroos, with living bodies, appear.³

After the rite has been duly performed, the young men go and hunt the kangaroo, bringing their spoils back to the camp. Here the old men, with the alatunja in their midst, eat a little of the flesh of the animal and anoint the bodies of those who took part in the Intichiuma with its fat, after which the meat is divided among all the men assembled. The men then decorate themselves with totemic designs, and the night is spent in

¹ *Native Tribes*, p. 462.

² *Op. cit.* p. 206.

³ III. p. 7.

singing songs relating to the exploits of the Alcher-inga men. When this has been done, the animal may be eaten sparingly.¹

When the men of the Emu totem desire to perform Intichiuma ceremonies, several of the men open veins in their arms and allow the blood to stream on the ground till it is saturated. When the serum has coagulated they trace designs on it in white, red, yellow and black, representing the different parts of the body of an emu. Several men of the totem then dress themselves to resemble emus, and imitate the manners and customs of the bird. They fasten Churinga on their heads to represent the neck of the emu, and chant a song to the emu constructed in the blood. They think that this act has the effect of preventing the totem from disappearing by quickening the embryos of the new generation.²

In the Unjiamba or Hakea flower totem an Intichiuma ceremony is performed at a shallow, oval-shaped pit, by the side of which grows an ancient Hakea tree. In the centre of the depression is a small projecting and much-worn block of stone, which is supposed to represent a mass of Hakea flowers. After the pit has been swept and songs inviting the tree to flower much and the blossoms to be full of honey have been sung, a young man is told to open a vein in his arm and

¹ *Native Tribes*, p. 204.

² *Native Tribes*, p. 181.

allow the blood to sprinkle on a stone till it is covered. This done, the ceremony is complete. The stone is regarded as a Churinga, and the spot is forbidden to the women, children, and the uninitiated.¹ In other words, the ceremony has established a blood bond between the totem and the totemites, and the place of the rite is rendered sacred, and therefore tabu.

Similar rites take place in other totems in Central Australia, differing, of course, in detail, but everywhere made up of the same essential elements.² If the chief of the clan did not solemnly eat of the totem, or if too much were eaten, the Intichiuma would fail, and, in consequence, according to Australian philosophy, the food supply would be affected, and some harm come to the group.

On the religious side, the chief interest of the rites just described lies in the fact that in them we find most of the essential principles of the later institution of sacrifice. After the totemic animal has been killed, the alatunja and the old men solemnly eat it, and thus assimilate the sacredness of the "theanthropic" animal. The chief difference between this and the later forms of sacrifice lies in the animal, in this case, being naturally sacred while ordinarily it acquires this character

¹ *Op. cit.* pp. 184 f.

² *Op. cit.* pp. 295 ff.; *Northern Tribes*, pp. 294, 296. Cf. Woods, p. 187.

during the rite. But the mystic sacramental union between the totem and the totemite is none the less maintained by the ceremony that terminates the Intichiuma. A man of the witchetty grub or emu totem believes himself to be a witchetty grub or an emu. In order to keep this quality he assimilates the flesh of the creature that he may dwell in the grub and the grub in him. The solemn preparations show with what reverential awe these sacramental meals are regarded by the natives. The fasts, the Churinga, the totemic decorations, the sacred rocks and designs, all testify to the sacred atmosphere surrounding the mysteries.¹

In the blood ceremonies we see exemplified the means whereby a blood covenant is made with the totem to prevent the totems from vanishing from the land. By opening a vein in his arm upon the kangaroo rocks, or eating the flesh of the sacred animal, or having its fat—a substance which, to the Australian, ranks equally with the blood as regards potency—rubbed on his body, a union of a sacramental nature is established with the totem. The mana concentrated in the victim (especially in the blood and its sacred flesh) goes out and gives strength to the communicant, neutralising his infirmities by drawing them into itself. In this way a sacramental union is established between the totem and the totemite

¹ Durkheim, *Les formes élémentaires de la vie religieuse*, p. 484.

through the communication of the mana resident in the supernatural ally. Consequently, we contend that, in what Dr. Marett calls the "pre-animistic" type of religion,¹ the earliest attempts at sacrifice were means whereby the "worshippers" were placed in physical contact, after a sacramental manner, with their totem.²

Now, if we are correct in assuming that Intichiuma ceremonies represent the most primitive and elementary form of sacrifice, does it not necessarily follow, from our previous argument, that the rite formed part of primeval cult? If the Aurignacians and Magdalenians who "worshipped" in the prehistoric sanctuaries described above performed ceremonies analogous to the Intichiuma rites of Australia they must have had an elementary conception of sacrifice. On this hypothesis, the arrows and the collection of pictographs found on the walls and floor at Niaux correspond to the designs and picture-representation of the emu in the Australian rites. The remarkable discovery by Count Begouen in one of the innermost recesses of the Aurignacian cavern of the Tuc d'Audoubert (Ariège) of two bisons modelled in clay, appears to be a further development of the drawings on the floor of Niaux.³ This

¹ *The Threshold of Religion*, p. xxi.

² Cf. the author's article on "Sacrifice" in the *Encyclopaedia of Religion and Ethics*.

³ *L'Anthropologie*, 1912, xxiii. pp. 657-665.

conclusion is justified by the fact that two other bisons are deeply incised in the layer of clay which covers the floor, apparently representing the first stages of the modelling. It would therefore seem that Tuc d'Audoubert was also a prehistoric sanctuary in which men renewed their mystical bond with the sacred animal from which they derived their very existence, and to which they would be gathered when the days of their pilgrimage were ended.

If Palaeolithic man did perform Intichiuma ceremonies and believe in a life after death, it is difficult to follow Frazer in his theory of a primeval age of magic. To describe Intichiuma rites as magical operations with no religious character at all, is clearly contrary to all the evidence from Australia. It is absurd to eliminate from religion a rite that represents the first step in the greatest institution in the history of religion.

The theory of Durkheim that both the essential forms of sacrifice—the act of oblation and the act of communion—are found in germinal form in the Intichiuma rites¹ rests on the evidence of Strehlow, that the hymn which is sung at the Kangaroo rite describes the “offering” of a morsel of kangaroo fat to make the fat of the animals increase.² With the exception of this instance, and of offerings to the dead consisting of stone

¹ *Op. cit.* p. 484.

² *Zeitschrift f. Ethnol.* p. 12, verse 7.

hatchets, clubs, and water,¹ there is no evidence of gift-sacrifice in Australia. The All-Fathers are regarded as remote anthropomorphic beings in need of nothing that man can give, and therefore, they are not the recipients of sacrificial gifts. Likewise in primeval cult, there is no evidence that the act of oblation formed part of the magico-religious rites performed in prehistoric sanctuaries. Offerings may have been made to the dead in Palaeolithic times, but gifts to supernatural beings must be regarded as of later development.

It will be seen from the foregoing pages that the origin of sacrifice must be sought in a natural human custom, rather than in an institution of Divine appointment. The latter view rests on Genesis iv. 3-5, and Heb. xii. 4, wherein it appears that Divine sanction permitted Abel's offering, and considered it, by faith, more acceptable than that of Cain. That Yahweh should show preference for blood offerings is in accordance with Hebrew ritual, in which the oblation in blood is considered to be the more efficacious, but it is contrary to the generally accepted view that the bloodless sacrifice was the loftier conception. In fact the *ἄπυρα ἱερά*—"offerings without fire"—were regarded by Greek philosophers of the fifth century, such as Porphyry, who had a vegetation theory to maintain, as the older form of sacrifice,

¹ Howitt, p. 463.

coming down from the time of man's innocence. If, however, we are correct in believing that sacrifice originated in rites and beliefs connected with Intichiuma, then neither can claim precedence in point of time.

The story of Cain and Abel, it is argued, suggests a Divine origin for the rite, because faith necessarily implies that there must have been a previous revelation touching the ordinance. Without such it would be superstition rather than faith. Furthermore, it has been pointed out by Protestant commentators that St. Paul condemns will-worship (*θελοθρησκα*, Col. ii. 23), and therefore it would have been unlawful for sacrifice to be offered unless directly ordained by God. But as this theory was directed against the claim of the Catholic Church to decree rites and ceremonies not expressly ordained in Scripture, it is hardly worth considering as a serious argument in favour of the Divine institution of sacrifice.

As a matter of actual fact the J narrative treats sacrifice as a natural institution; an instinctive mode of worship; while the P creation document ignores the existence of the rite altogether. Some have tried to read into the clothing of Adam and Eve with "coats of skins," after their banishment from the garden, the authorisation by Yahweh of sin offerings. But this reasoning is precarious. The circumstances of the case are all against such

an interpretation. While Adam and Eve were in the garden communion with God is represented as uninterrupted, and therefore sacrifice would be unnecessary. It is far more reasonable to regard Genesis iii. 21 as a fanciful explanation of the origin of clothing than as the beginning of sacrifice.

In conclusion, it may be said that the Divine origin of the institution stands or falls with the theory of a primitive revelation, and since there are few, if any, theologians who have not abandoned the view that a revelation was vouchsafed to the Jews alone, the grounds for seeking the Divine origin of sacrifice are very uncertain. Now that a healthier and juster view is being taken of the revelation of God to man, the Divine origin of religious institutions is sought not in books but in the minds of men—it is in the “fleshy tables of the heart” that the Most Highest is pleased to dwell, speaking in the worthier manifestations of the “nature” that He has made, till in the fullness of time, when man’s mind was ready, He substituted a final for a progressive revelation, in the Incarnate Logos.

From very crude and rudimentary conceptions of a mysterious impersonal power (*mana*) attaching itself to objects and circumstances in any way inexplicable to the primeval mind, to the idea of a localized supernatural power, and a controller of the universe whose abode was in the sky, God,

in His infinite wisdom, has led the race onwards in a knowledge of Himself, to a doctrine that the Incarnate Son could claim as His own, and re-enforce with Divine authority. From grossly material conceptions of a life beyond the grave man has been led on till, on the first Easter Day, the great Christian doctrine of Resurrection and Life was proclaimed and set forth before the wondering eyes of the original followers of the Nazarene. From curious totemic ceremonies performed in prehistoric sanctuaries, the central rite in the history of religion has been evolved. Through sacrifice in some form or other, men everywhere have sought to establish, renew and maintain communion with the sacred world. It is indeed a far cry from primitive Intichiuma ceremonies to the highest conception of sacrifice centring round the presentation before the great All-Father, at an altar on high, of a "Lamb as It had been slain." But when the dim and shadowy rites and beliefs of primeval cult are understood to be the first steps in the education of the world for the reception of a Divine revelation in Christ, they are raised by the reverent and intelligent enquirer from the depths of magic and superstition to the Divine order of things. When the idea of Christianity as God's reply to the yearnings of the human heart in all ages—the completion of the religious education of the race—is grasped, it is

realised that to see religion in its true perspective, it is necessary to get behind the “religion of the Semites” as set forth in the Old Testament. In the words of Robertson Smith: “To understand the ways of God with man, and the whole meaning of His plan of salvation, it is necessary to go back and see His work in its beginnings, examining the rudimentary stages of the process of revelation.”¹

¹ *The Old Testament in the Jewish Church*, p. 192.

CHAPTER V.

THE BEGINNING OF CIVILIZATION.

IN its literal and etymological sense civilization (*civilis*, "pertaining to a citizen") implies a social condition existing under the forms and governments of an organized State. In practice "civilization" is usually interpreted in a narrower sense, as applying to the more recently evolved system of culture of the most developed modern races of mankind. But the anthropologist cannot countenance such a restricted use of the term. To him "civilization" comprehends all the principles underlying social development in all stages of culture, although at the same time he recognises that civilization, in its more restricted and literal sense, is concerned mainly with man's relationship to the State, and the forces which have held together the larger associations of men and made social efficiency in its highest sense. The object of our present enquiry is to set forth some of the causes which tended to bring about the development of civilization and the evolution

of man "the tiller of the ground," to man "the builder of cities."

The investigation of the beginnings of civilization carries us far back into those early ages when Drift Man lived the life of a hunter, catching and eating wild animals, gathering berries and roots, having neither flocks nor herds, and ignorant of the simplest conceptions of agriculture. The very earliest inhabitants of the world were, as we have seen, in an extremely primitive state of culture. Towards the end of the Palaeolithic, and particularly in the Neolithic period, great advances were made which had far-reaching effects on the social conditions of the human race. Hitherto man had possessed no utensils that could withstand the action of fire. Water was boiled by dropping hot stones into any receptacle that could be obtained. The civilizing influence of the discovery of the art of pottery-making must have been considerable, since it extended the dietary of Neolithic man to an almost unlimited degree. Meats, vegetables, bones, etc., were not only rendered more palatable but also more nutritious, and in numerous other directions boundless possibilities, not only in the culinary art, opened before his gradually increasing vista. The art of spinning, basketry and weaving were yet other discoveries presumably made in Neolithic times, but of all these developments in civilization perhaps the greatest was the momentous

occasions on which man learnt the secret of *domesticating animals* and *cultivating crops*. This great progressive movement constitutes the real transition of the wild hunter, fisher, and fruit-gatherer to that of the settled tiller of the soil. It is to this change of custom that the expansion of industrial arts and evolution of the higher social and political institutions are mainly due. The dog was apparently the first animal to be domesticated; but the sheep, the ox, and the horse undoubtedly followed in rapid succession.

It is at this point in the evolution of civilization that the authors of Genesis begin their narrative. Of the earlier hunting stage they apparently know nothing, since dominion over the animals is portrayed as a divinely appointed privilege of human nature. Thus the lower creation is suffered to pass before man that he may learn from the Creator the names of the various creatures. Adam is evidently assumed to have a knowledge of agriculture, since he is no sooner driven from Eden than he begins to till the soil. Of his two sons one is a shepherd, the other a herdsman. It is not till later that Nimrod the hunter is brought upon the scene. The compilers of the sacred narrative are therefore obviously ignorant of the existence of a Palaeolithic and Neolithic culture as described in the foregoing pages. They do not even hint at a prehistoric era in which man lived from hand

to mouth on the wild products of nature, ignorant of the simplest arts, save to make a flint implement, till he gradually advanced in civilization, leaving behind first the old and then the new Stone Age, and passing through the various ages of metal—Copper, Bronze, and Iron. The Old Testament, therefore, begins with the time when man became a herdsman, no longer dependent on the chase for his existence. But inasmuch as later cultures can only be rightly understood when viewed in the light of that which has produced them, civilization being a product of evolution, the theologian as well as the scientist should commence his investigations with a survey of prehistoric man.

To resume our main thesis, we find that when man became independent of the chase for the necessities of life he was prone to cultivate what Aristotle has described as a “migratory farm.” He and his family, consisting of wife, children and herds, were compelled to wander from pasture to pasture over wide tracts of country in the trail of the flocks. Such a mode of life necessitated the reduction of goods and chattels to a minimum. The tents and clothes would be of the simplest textiles, the weapons need not consist of more than a lasso and a sling, while a knife and a few scrapers would constitute all the tools required for the immediate needs of a pastoral people. In patriarchal society industry cannot be developed

beyond the mere replacement of things lost or destroyed, and therefore little progress is manifested in this direction. Likewise social organization is confined to the "patriarchal family," consisting of father, mother, children and the herds, all working for common good of the other. A childless man under pastoral conditions would indeed be in a sad plight, since he would have no one to look after the flocks, consequently it not infrequently happens that if the offspring is not as numerous as necessity demands the deficit is procured from unwary neighbours !

Such, then, is the mode of life of pastoral people, the best example of which perhaps is the graphic picture displayed in the Book of Genesis. Unlike hunting, this highly specialized manner of maintaining life was not by any means universally adopted by primitive man. It only occurs under conditions which are themselves exceptional just because they are so exceedingly simple. In short, patriarchal society is merely the result of a successful correspondence to a peculiar environment, but nevertheless it plays its part in the development of civilization, since the patriarchal condition, in which the unit is the family under the despotic rule of its head, passes into the system in which individuals make up a society whose government is centralized in a chief or king.

Again, pastoral man traversing wide areas,

impassable till the horse and camel had been domesticated, thus comes in contact with distant peoples. In this way commerce has come to form an important part in the dissemination of commodities and ideas, and with the development of various trades, made possible by this interchange of culture, large communities have sprung up in process of time in certain places.

Professor Myres, in his excellent little book, *The Dawn of History*, traces four principal phases through which human history and civilization has passed.¹ The first stage is one in which the centres of advancement are provided and defined, by great river valleys, with alluvial irrigable soil. Thus, for example, among the agricultural civilizations of the Ancient East, intercourse took place between the Euphrates and the Nile, along one narrow line of communication, half river-bank, the upper course of the Euphrates itself, half a narrow strip of hill country bordered on one side by the Mediterranean Sea, and on the other by the Arabian desert, into which it fades gradually away. To and fro along this ridge went commodities and individuals and ideas between Babylonia and Egypt; along it too went armies, when either of these powers was strong enough to attempt an advance against the other. Such, then, is the first stage of human history, the development,

¹ Pp. 29 ff.

within the limits of rivers and valleys, of self-centred and almost self-sufficient worlds, each with its own special type of civilization adopted to local conditions.

The second phase began when islanders commenced an interchange of commodities with the mainland or other islands, communicating with each other over the "wet ways." Thus grew up the great civilizations in the Mediterranean lands, the empires of Minos, of Athens, and of Rome; each successive attempts to realise a civilized *Orbis Terrarum*.

The third phase opens when the genius of Caesar, after crossing the Rhone, foresaw the possibilities of a New World with the Atlantic as its shore. Thus came into being the great northern sea-powers which were destined to overrun Rome, Athens and Constantinople, and even to demonstrate that the Atlantic, like the old Aegean, is but an inter-continental gulf between "United States" and disunited.

The fourth phase brings us to recent times, with the occupation of Australia and the westward coasts of America, and the awakening of the eastern lands—China, Japan and India—to the benefits of western culture. What awaits the future development of civilization it is impossible to say, but one thing is certain that the tremendous struggle in which the civilized world has been engaged will

have far-reaching effects on the evolution of culture.

Having briefly reviewed the chief successive scenes in the drama of history as set forth by Prof. Myres, we must return to our main topic—the *beginnings* of civilization. As soon as it became possible for large numbers of people to form localized communities the elaboration of political institutions took place, proceeding along lines suggested by the experience of earlier epochs. All this tended to emphasize the idea of nationality based primarily on blood-relationship, to which, in early society, a religious significance is attributed. As the family expanded into a larger group like the Latin *gens*, and this again into the clan, the family life and the tie of supposed blood-relationship continued to act as a basis of social unity. Thus, for example, the family relationship is among the most powerful features in the Chinese civilization of the present day. In the West, as civilization became more complex, the tribe included several groups of blood relations, although its organization still followed that of the family, till, in process of time, it became merged in the more highly organized condition of the political State. In fact the tribal constitution survived “as a bridge between the family and the State, and fell away as soon as the State was assured.”¹

¹ Bluntschli, *The Theory of the State*, 2nd Ed. p. 196.

Another result of this development was the conception of property. In the most primitive state of culture no one said that ought of the things which he possessed was his own, since all things were common. But as the theory of blood relationship developed into that of the State, the practice grew up of the individual ownership of valuable or desirable commodities which had been acquired by labour or heredity. The development of the principle of private property, and especially of private property in land, did much to shape the social order of society, constituting as it does the fundamental class distinction between rich and poor. Even the Indian caste-system comes back to private property, since the most honourable occupations coincide more or less with financial status. Murder became recognised as an offence against property, and therefore could be atoned for, as among such people as the Iroquois to-day, by certain presents to the injured kin. Theft is likewise considered among the Australians as a violation of property-rights, and is dealt with accordingly.

We have yet to mention, however, the discovery which, after the domestication of animals and the cultivation of crops, had the greatest effect on the development of civilization in primitive culture. The revolution in practical life of the human race that followed the transition from the use of stone

to that of metal probably exceeded in its far-reaching effects the metamorphosis effected at any previous point in the early history of mankind; and is only comparable, as a turning point in the progress of civilization, to the discovery of steam and electricity at the end of the eighteenth century.

When and where it was discovered that by mixing tin with copper the harder compound bronze could be produced still remains a mystery. A knowledge of bronze implies a previous acquaintance with its component elements. The use of copper in Egypt and the Eastern Mediterranean can be traced back to the Fourth Dynasty, while in Europe, in North Italy, Hungary, Spain, and Ireland, simple forms of copper celts have been found, made by hammering the metal into shapes on the plan adopted by workers in stone. Similar evidence is forthcoming from North America, and in Babylonia copper was known as early as 4500 B.C. The earliest evidence of working copper appears to come from Egypt, and so far supports the theory that it was the seat of the original discovery of the metal. It may be assumed that copper preceded bronze in those parts of the world where the ore was accidentally discovered, and found to be more convenient than flint for making implements. But at present there is not sufficient evidence to warrant the conclusion that a Copper Age everywhere preceded a Bronze Age.

Bronze was probably first made accidentally. The prehistoric inhabitants of the Old World seem to have often melted their copper before they shaped it, since nearly all the copper implements have been produced by casting in open moulds, and thus, in districts where oxidised copper ores occur in admixture with tin ore (cassiterite), bronze would be accidentally formed in the crucible. It would soon be seen that this substance, unlike the pure metal, could be cast in enclosed moulds, and so more elaborate forms could be made. Here is a distinct advance in culture, involving new methods and a certain power of observation, of which the primitive mind is by no means incapable. Former designs speedily became elaborated. The hammered flanges of the early copper "age" were deliberately cast and much exaggerated on bronze instruments. In course of time these flanges developed into a double socket into which the handle of the celt was made to fit. In the same way the ridge across the celt that acts as a stop to the haft developed into a purely decorative feature. In the later forms of celt the double socket separated by a tang develops into the single large socketed celt by the elimination of the tang. No socketed celts are found in early bronze types, and therefore the evolution must have been from the flat to the socketed celt.

Thus it seems evident that in the Bronze Age

we are not dealing with a brand new civilization, but a development of the Stone Age culture. Flint implements and weapons were simply modelled in accordance with the properties of metals, and the commercial and social aspects of life modified accordingly. The social organization already founded by the Neolithic inhabitants of Europe were simply continued and carried out with greater efficiency in consequence of the substitution of bronze implements for the less effective materials formerly used. Again, the question of the origin of bronze is forced upon us. It has been alleged that the advent of bronze into Europe was not due to the peaceful advance of civilization, but rather to the appearance of an Aryan race from the south-east migrating in a north-westerly direction. In support of this theory it is argued that weapons, utensils, and implements of the Bronze Age have a uniformity in type, which, in the case of the arms, bears a certain resemblance to oriental forms. But, in the first place, the conclusions of certain philologists that the Aryan civilization originated in the East has been disproved by Dr. R. G. Latham, who has shown that the majority of the Aryan peoples is found in Europe and not in Asia. Furthermore, it has been pointed out by certain philologists that the philological evidence suggests a European origin for the Aryan language, if not for an Aryan race. A study of their vocabulary

indicates a knowledge of the dog, the ox, sheep, goat and pig as domestic animals, and rudimentary methods of agriculture. The distribution of the name for the beech tree has been used as an argument in favour of the home of the Aryans being west of a line drawn from Königsberg to the Crimea, which is the habitat of the beech. But the Greek equivalent of the word is *φηγός* (Lat. *fagus*), an oak, which extends the line to the Malian Gulf, where the oak flourishes. Although the arguments for any given area are not conclusive, the balance is on the side of an European origin for the Aryan language. But even if this were not the case the Oriental origin of bronze would not be proved, since the Aryan civilization belongs to the "chalcolithic" period, when stone was still in use, and *no metals except possibly copper were known*. In fact, as Dr. Schrader has pointed out, the Aryan stage of culture is best illustrated by the earliest remains found in the lake-dwellings of Switzerland.¹

Exactly when and where the discovery of bronze was made cannot be ascertained in the present state of our knowledge. The Aryan origin is clearly ruled out of the question. Egypt has been named as a probable home of the compound, but tin does not exist in either Egypt or Mesopotamia, although, as it has been shown, the use of copper

¹ Trans. by Dr. F. B. Jevons, *Prehistoric Antiquities of Aryan Peoples*.

in the country can be traced to the Fourth Dynasty when King Seneferu captured the copper and turquoise mines of the Sinaitic peninsula. The late Dr. Gladstone, in a paper entitled "The transition from pure copper to the bronze made with tin," which he read before the British Association, maintained that "attempts were made to render this copper harder and stronger in three ways. First, the admixture of a large quantity of suboxide of copper or its formation in the process of smelting, as seen in adzes from Egypt and Palestine, and perhaps Naqada. Second, the presence of a little arsenic or antimony, as shown in many tools from Kahun dating from the Twelfth Dynasty, and from the Sinaitic mines, as shown in a communication to the French Academy by Berthelot. Third, the admixture of a little tin, as at Kahun, the Sinaitic mines and Cyprus, perhaps not exceeding one per cent. When, however, the superiority of tin, as the hardening material, came to be acknowledged it was added in large quantities and formed the alloy known as bronze."¹ In this case the tin, which is not native in Egypt, must have been imported from a foreign country—whence it is impossible to say. In later times no doubt Spain, Britain and China were sources of the tin supply for Europe and the Mediterranean, but since bronze appears to have been known in Egypt in very early times,

¹ Liverpool Meeting, Brit. Ass. 1896.

the original source of tin can hardly be looked for in the mines of Western Europe. Neither in the East is there evidence of the working of the stanniferous deposits in the Caucasus, Southern China and Khorassan. The absence of a bronze culture in the region of the Caucasus makes it an unlikely source.¹ China was probably in the Bronze Age as early as 3000 B.C., in fact, nine bronze caldrons from the country are dated about 2205 B.C. The tin of Khorassan was apparently worked at an early date, and may have found its way to the valley of the Euphrates in prehistoric times, and thence to the Nile.

Wherever bronze may have originated, it is highly improbable that the industry was evolved in any one place at a given time, and spread by culture contact over the civilized world. At the same time it should be remembered that in the Bronze Age recognised trade routes were in existence, and therefore there was an ebb and flow of different peoples along these routes. Consequently an interchange of material and ideas took place, which accounts for the variation and complexity of celts and other bronze objects. Germany was traversed by the two main trade routes, which owed their existence to the wealth of amber on the west coast of Denmark and the south Baltic. The first ran from the Adriatic, in the neighbourhood of Venice,

¹ E. Chantre, *Recherches Anthropol. dans la Caucase*, p. 77.

up the valley of the Adige, through the Brenner Pass and down the Inn to Passau, where it joined the Danube. Thence it passed through the Bohemian Forest to the North Sea by way of the Elbe. The second route started from the Gulf of Trieste, going in a north-easterly direction to Laibach, thence to Gratz, and down the Leitha to the Danube at Pressburg. The route then crossed Moravia and passed through Silesia along the Oder, across Posen to Dantzic. In connexion with the trade routes it should be mentioned that, during the developed period of the Bronze Age, the spiral, so prevalent in the Aegean and Egyptian art, hardly occurs on the continent west of the Elbe route just described; but, as is clearly seen on the carved stones of the New Grange barrow in County Meath, and on the chalk drums found in a barrow erected over a central cairn on Folkton Wold in the East Riding of Yorkshire, it probably reached the North-West in earlier times by a different route.¹ Granting that the erection of the dolmens are the work of one race, a route from North Africa to Gibraltar and Spain, proceeding thence through Santander and Western France to Brittany, Havre, Dieppe, the Channel Islands and England was probably in existence by the beginning of the Bronze Age.

The prehistoric trader no doubt travelled from

¹ *Guide to Antiq. of Bronze Age* (Brit. Museum), pp. 95, 96.

village to village carrying with him ornaments, pottery and weapons, and bought back in exchange for his commodities slaves, amber, jet, salt, etc. Thus, in countries situated in or near these main lines of commercial intercourse, the more complex forms of the metal industry with ornamentation of more elaborate designs were never developed, since, before the manufacture of bronze weapons and implements had time to reach the zenith of artistic development, they had been discarded in favour of iron.

Although iron was known in Egypt about 1500 B.C., it was not used apparently to any extent for industrial purposes in Europe till about the ninth century B.C., by which time the Greeks, Etruscans, Illyrians, Italians, and Phoenicians were settling down in the Mediterranean area. Since iron is a simpler substance than bronze it has been suggested that the Iron Age preceded the Bronze Age, but this conclusion is not supported by the bulk of archaeologists. True, its ores are more abundant and more easily reduced than any others, and, in its meteoric form, it requires no reduction at all—a fact discovered by the Eskimos, who make iron implements by flaking fragments of meteorites like flint. Furthermore, it is argued, iron was known in Egypt as early as bronze; that is to say, in the Fourth Dynasty. A piece of the metal was found in the south gallery of the Gizeh pyramid which

possibly belongs to this period. At Abydos Prof. Flinders Petrie came upon a lump of iron wrapped up in a fabric with a mirror and tools of copper, belonging to the Sixth Dynasty¹ (3300-3100 B.C.), and iron beads have recently been discovered in pre-dynastic graves at El Gezeh.² But although it thus appears that in Egypt iron was known as early as bronze or copper, the absence of the metal from the sixth to the eighteenth Dynasties, and the fact that no trace of blue (the colour by which iron is depicted) is found on the wall paintings prior to the nineteenth Dynasty, shows that it was not in common use till about 1300 B.C. Iron ore is abundant in the Nile valley, and it is therefore difficult to believe that the ancient Egyptians would have continued to almost exclusively use bronze so long had they been acquainted with the harder and more serviceable metal. It is highly improbable that it would have fallen into disuse in places where its ores could be obtained, and that in the early Iron Age bronze would have been employed for ceremonial purposes. To account for the entire absence of iron in graves and early sites by the theory that they have disappeared through oxidation is to offer a most inadequate explanation of the facts, since it is incredible that no trace of discoloration, or of an iron tool, would have been preserved had the metal really existed.

¹ *Abydos* ii. (1903), p. 33.

² *Man* (1911), p. 109.

To this negative evidence must be added the positive fact that there is a definite evolution of type from stone to bronze implements, while the early iron forms show a remarkable resemblance to bronze instruments. Moreover, the negative evidence gets no support from the well-known early Iron Age site at Hallstatt, where, after being buried nearly 3000 years, the weapons, though oxidised, still retained their form as completely as those in bronze.¹

As a matter of fact the threefold division of early civilization into Stone, Bronze and Iron Ages has no chronological value, as there has been no universal synchronous sequence of the three epochs in all parts of the world. In Africa, south of the Sahara, for instance, there has been no Bronze Age, the use of iron succeeding immediately the use of stone. The same applies to parts of North and South America, and the Pacific. In Europe the Iron Age occupies the closing years of the prehistoric and the beginning of the historic periods. No iron objects occur among the relics from the prehistoric cities of Troy, Tiryns and Mycenae. Homer represents Greece as beginning her Iron Age 12,000 B.C., but during the Homeric period iron was regarded in Greece as a rare substance. In the *Iliad*, for instance, weapons both of iron and bronze are represented as in use, but iron appears

¹ Cf. Montelius, *L'Anthropologie*, i. 27; *Man* (1905), 7.

to have been comparatively rare, since it is only mentioned 23 times, while bronze occurs 360 times. In the *Odyssey* the numbers are 25 and 90 respectively.¹ It was not until the time of Hesiod that iron came into anything like general use.

Slowly the knowledge of the new metal spread through Etruria (1400 B.C.) and Gaul (800) B.C. to Ireland and Denmark (100 A.D.). In the north of Russia its introduction was as late as 800 A.D. Two localities in particular have been discovered which have yielded sufficient iron objects to be used as generic expressions for the civilizations they respectively represent, and as standards of comparison. These are the large cemetery at Hallstatt, in Upper Austria, and the *Oppidum* La Tène, in Switzerland. The cultures represented by these stations cover a wide area of distribution extending from North Italy to the British Isles, and therefore enable archaeologists to form a fairly accurate idea of the Iron Age in Europe.

The Hallstatt Civilization, which takes its name from the cemetery discovered by Bergmeister G. Ramsauer in the Nordic Alps, about forty miles from Noricum, represents the earliest transitional stage in which the Bronze Age types, such as the flanged and tanged celt and leaf-shaped and socketed spear heads survive. In the Hallstatt cemetery

¹ J. D. Seymour, *Life in the Homeric Age*, and A. Lang, *Homer and his Age*, pp. 176-208.

there was no less than 993 burials, revealing evidence of the transition from the use of bronze to that of iron. Three distinct phases of culture are represented at this site. In the first period *cremation* was the mode of disposal of the bodies of the dead in Central Europe, the ashes being deposited in an oval clay saucer. The characteristic weapon of this period was the sword, with a notch to protect the hand. Later in Period I. the end of the blade became blunt, and, if it was made of bronze, the handle was composed of iron inlaid with amber. The bronze sword disappeared in Period II., and its place was taken by the iron sword of "Hallstatt" pattern. The purely geometrical form of ornamentation of bronze vessels was replaced by an oriental style in which were depicted processions, including a stag cropping a plant, a sphinx, and a goat holding a branch in its mouth. The Phœnicians may have influenced the spread of oriental art by their commercial activity. We know, for instance, that Hiram, King of Tyre, supplied materials to Solomon for the erection of the Temple at Jerusalem in the middle of the tenth century B.C., but after the conquest by Nebuchadnezzar in the sixth century, the Phœnician commercial supremacy passed to Carthage. Furthermore, the Phœnicians developed no art of their own, and therefore it was from Egypt that the influence really came, the Phœnicians being merely the

intermediaries. Period III. is represented by a short sword with horned handles which were often ornamented, and correspond to the early La Tène type. But these later graves, in which *burials* have largely taken the place of cremations, are not so rich as those of the earliest phase of Hallstatt culture.

This civilization spread through Austria, Illyria, and Syria, to the Danube, another wave passing northwards to Cilicia and Posen, but it did not penetrate to North Germany. In France it was confined to Burgundy and the district south of the Marne and the Rhine. It is probable that the trade followed the valley of the Po through Switzerland, and thus it reached the Rhine valley. This explains the evidence of contact with Italy from objects belonging to the Hallstatt civilization, such as is set forth by the magnificent Etrusco-Greek vases surmounted with handles representing figures of Greek goddesses found in this area.

The La Tène Civilization is not a continuation but a parallel growth of the Hallstatt culture. It is usually connected with the founding of Marseilles in the seventh century B.C., and is characterised by the disappearance of Bronze Age forms. Classical influence is still apparent in the sepulchral pottery, a good example of which is a remarkable flagon with cylindrical spout found at Waldalgesheim. The semi-classical era of Central Europe

is represented by the Somme-Bionne (Marne) chariot-burial, which contained a body laid between the two wheels of a chariot (the latter standing in two trenches cut below the level of the grave). About the warrior lay bridle-bits and trappings of two horses, red-figured pottery, a jug with a lengthened spout, and a sword with the scabbard end simply curved. The horse trappings show beautiful open curvilinear bronze work exemplifying the art of this period, while the dish with red figures on a black ground being referable to the fifth or fourth century B.C., afford evidence of the date of the burial.¹ Coral was largely used in this period for decorative purposes on ear-rings, bracelets, etc., and as amulets, though it is common only in certain districts (Southern Russia, Northern Italy, Central Europe, Gaul, and Britain). Its source was probably the Mediterranean region, whence it passed up the Rhone valley to Gaul and Britain. The early La Tène pottery is characterised by the pedestalled urn with cordons or bands in relief above the shoulder and round the foot, which had the effect of strengthening the vase.

In the second La Tène period (300-125 B.C.), which falls between the Greek and Roman influence, chariots and harness disappear, swords become larger, burials are poorer, and even pottery and

¹ L. Morel, *La Champagne Souterraine* (1875).

metal vessels are rare. Burials continue as the proper rite, although cremation apparently is still occasionally practised. The foundation of the Roman province of Narbonensis (B.C. 121) in southern Gaul, marks the beginning of a new era for the Celtic population. At the same time tribal movements in Southern Germany constituted a grave danger to the Republic, which was destined to end in the conquest of Rome by barbarians 500 years later. The last period of La Tène culture corresponds to the closing century of the Roman Republic, and is marked by striking changes, archaic survivals being surpassed by complete innovations. These late La Tène antiquities are the forerunners of Roman provincial art which had far reaching effects on the civilization of northern Europe. The characteristic sword of this period is long and double-edged, with a rounded end; spear-heads are larger than before, and shield-bases are more oval and less massive. Harness and chariots reappear, and spurs first make their appearance. Pottery, painted with red and yellow geometrical designs, is found in Northern and Central France, North Switzerland, in the Rhine valley, and in Bosnia. Little is known as to the date and origin of coins, but it is not till towards the end of the La Tène civilization that they become plentiful. Cremation reappears in North France and on the Rhine. This was possibly

due to the conquest of Gaul and Italy, the invaders bringing the custom with them.

The closing century of La Tène is also marked by the replacement of coral by enamel, coloured in imitation of and attached to bronze or other metal. The origin of the art is obscure. Virchow discovered an enamelled plate in an early Iron Age grave at Koban in the Caucasus,¹ and in the Greek and Scythian tombs on the northern shore of the Black Sea, belonging to the fourth and third century B.C., enamelled jewellery has been found. The industry is therefore of considerable antiquity, although it does not appear to have been known to the ancient Egyptians, or, prior to Scythian influence, to the Greeks. Apart from the instances mentioned above, the use of enamel to decorate metal belongs essentially to the latter part of the La Tène period in Central and Western Europe. The decay of the coral industry was apparently due to the cessation of trade between the Mediterranean and India owing to the conquests of Alexander the Great, and thus the process of enamelling arose to take its place. Since the methods adopted at Koban resemble those of the La Tène period, the ground being hollowed out to receive the enamel, it is possible that the process was brought from the Caucasus. Be this as it may, it was the Celts of Great Britain who were the past masters of

¹ *Das Graberfeld von Koban*, p. 71.

the art. Up to a certain point enamelling seems to have developed on parallel lines in this country and on the Continent. Red was the only colour employed in early days, but gradually the British workman made great strides and succeeded in covering large surfaces in the most effective and artistic manner, thus earning a reputation as a craftsman of great skill. In fact some authorities have actually described the process as a British art.¹

The La Tène stage of the Iron Age culture in Switzerland roughly corresponds to what in England is known as the *Late Celtic Period*. The Bronze Age inhabitants of this country appear to have been closely connected with the short, dark, brachycephalic Celts—the *Gallica Celtica* of Caesar—who inhabited Auvergne, Dauphiny, Savoy, the Grisons and the Maritime Alps. This race is often confused with the tall, fair, and moderately brachycephalic people of the Round Barrows, represented in Britain by the Gaels and Brythons (Welsh), since they spoke the Celtic language. But the Celts of history and ethnology, and the Celts of philology are distinct races, and therefore it is a misnomer to apply the term Celt to the tall fair Scot and Irishman, and the short, dark Welshman (by whom Celtic is still spoken). In the early Iron Age the half-Teutonic Brythons—probably the Belgae of Caesar—conquered north-east France

¹ J. Anderson, *Proc. Soc. Antiq. Scot.* xix. p. 45.

and south Britain. They have therefore been credited with introducing the civilization known as Late Celtic. The Iron Age antiquities may well be Celtic on the ground that they originated with a people who were a branch of the Galli or later Celts, although the relics at Aylesford are presumably of Belgic origin. "We have here," says Sir Arthur Evans, "for the first time a native example of an 'urn-field' belonging to the period that preceded the Roman invasion, the immediate antecedents, of which are to be sought in the Belgic parts of Gaul, but which may be ultimately traced to an extensive Illyro-Italian province, and to a south branch of the urn-field group characterizing the early Iron Age of East Central Europe."¹ No article of purely Roman origin was found at Aylesford, but a fibula of La Tène III. type. The burials suggest the beginning of the first century B.C. The pottery was apparently manufactured in Gaul, which points to a Gaulish invasion followed by a settlement in the south-east of Britain in the second century B.C. Sir A. Evans seeks the ultimate origin of the pottery beyond the Alps in North Italy or Illyria, a contention supported by the classical designs on the jug and wooden bucket discovered at Aylesford. Be this as it may, there can be little doubt that the interment reveals Gaulish influence in Britain at this time, and in

¹ *Archaeologia*, lii. p. 37.

consequence of this discovery of Belgic remains in England, some archaeologists have been led to prefer the expression *La Tène* rather than *Late Celtic*, to avoid the confusion of the Celts and Belgae in describing British art. However, the latter term is sufficiently well established to justify its use here.

In the peculiar class of antiquities represented by this stage in the Iron Age the British Isles stand unrivalled in Europe. It is possible that the art of Mycenae influenced to some extent the *Late Celtic* design, as, for example, the S and C spiral-curves occasionally found on objects belonging to the period. The pottery likewise shows unmistakable signs of having been derived from prototypes of metal.¹ Nevertheless, the *Late Celtic* art shows such a remarkable advance on that of the Bronze Age in Britain that it is usually regarded as a separate and indigenous culture. Artistic designs, generally consisting of scroll patterns skilfully executed, ornamental shields, swords, daggers, horse-trappings, fibulae, pottery, mirrors, etc. Sometimes the metal is decorated with enamel in a manner calculated to call forth the admiration of the modern artist. Coral was also employed for purposes of ornamentation of sword-sheaths, etc.,² but amber and glass, though

¹ *Iron Age Guide*, Brit. Mus. p. 24 f.

² *Proc. Soc. Antiq.*, 2nd Series, xx. p. 214.

frequently found on the Continent, have rarely been discovered in British sites. The Late Celtic culture reached its zenith before the Roman conquest, though many of the ornaments appear to belong to the Roman period.¹

The bronze shield, elaborately decorated with successive circles of repoussé work and bosses, found in the Thames near Battersea, may be regarded as the highest point of Late Celtic art. The embossed portions are enriched by symmetrical and linear engraving, and discs of red enamel. It is the raised curvilinear patterns on the circular plates riveted on the surface which give the shield its unique artistic character. This ornamentation shows a mastery of design, a firmness and sureness of execution which is unsurpassed by similar work in any place or age.

Articles of foreign manufacture found among the remains of Late Celtic art testify to the increased commercial activity that followed the Belgic invasion. The Aylesford cemetery, for instance, has yielded a bronze-mounted bucket, a bronze flagon, a skillet of frying-pan shape and three fibulae, which afford strong evidence of intercourse with the Continent. The flagon is of Italo-Greek manufacture, and the skillet and one of the broaches have counterparts in the San Bernado cemetery near Lake Maggiore. The other

¹ Rice Holmes, *Ancient Britain*, p. 241.

two broaches are of the type common in La Tène III. A remarkable bucket was found containing burnt bones near Marlborough, Wilts, which belongs to the same class and period as the similar specimen from the Aylesford urn-field. It is adorned with figures of sea-horses which are common on Gallic coins of the district about Rennes, and which therefore support the conclusion that it was imported from north-western Gaul.¹

It therefore seems that the Late Celtic civilization was to some extent influenced by the contemporary phases of Central European civilization, although, at the same time, the art was sufficiently differentiated as to produce within the British Isles a new culture. Thus the term Late Celtic, as applied to some of the noblest creations of the Iron Age, seems to be justified.

The Glastonbury Lake-Village gives a vivid picture of British civilization before the arts of Rome penetrated to the west of England. In a field situated about a mile from Glastonbury, a number of mounds were observed by Dr. Arthur Bulleid, which mounds upon excavation were found to be the site of a prehistoric village; each mound representing a dwelling. The huts were circular, 18 to 25 feet in diameter, with walls built on poles 6 feet high, and about a foot apart, with wattle and daub between them. A central-post carried a

¹ *Archaeologia*, lii. (1890), p. 373.

thatched roof. Oak planks were placed upon brushwood to raise the floor of the huts above the marsh. This platform was kept in position by being pinned by means of poles penetrating the peat below to a considerable depth. A circular hearth-stone was found, usually in or near the centre. The absence of bronze implements and Roman culture, and the presence of fibulae of La Tène II. and III. types, show that the settlement belongs to the Early Iron Age. True, numerous articles of bronze have been found, but these consist of fibulae, a mirror, and an ornamented bowl, and therefore they can hardly be assigned to other than the Iron Age. Other finds were a jet ring, amber and glass beads, several weaving and pottery-making instruments, and a number of querns, whetstones, crucibles, etc. It is thus clear that the inhabitants of the lake-village at Glastonbury had made considerable progress in the higher arts, though, judging from the absence of coins, Samian ware, etc., they lived in a time prior to the Roman settlement in England (*i.e.* 300 B.C.).

Here, then, is a picture of the progress of civilization in Britain at the end of the prehistoric period. The animal remains found at Glastonbury show that sheep, horse, pig, goat and *bos longifrons* were the domesticated companions of man before the Roman invasion, while the seeds of the oak,

alder, and birch, together with barley, suggest the vegetation of the period. The implements and querns show that these lake-dwellers not only cultivated the land but also ground their corn. It is evident, judging from the bones, shuttles and combs, that they wove their own clothing. They made pottery both by wheel and by hand, and decorated it with the characteristic Late Celtic curvilinear designs. They were experienced carpenters and wood carvers, as is shown by the work and tools which have been unearthed. The absence of coins (with a single exception) is easily explained by the presence of iron "currency-bars" of specific weights, used for purposes of trade during the Late Celtic period.¹ Another lake-village has been discovered by Dr. Bulleid three miles from Glastonbury at Meare. This also belongs to the Late Celtic, and reveals many objects similar to those found at Glastonbury.

When once man had conceived the idea of smelting iron he became capable of developing all the latent powers within him. Wood and stone could now be fashioned as never before. Houses could be erected and cities walled with ease and efficiency, and instruments constructed. Many new arts and industries hitherto undreamt of now came within the reach of developing races. In the social sphere a complex political organization had

¹ *Glastonbury Lake-Village*, A. Bulleid and H. St. G. Gray (1911).

been evolved based on a sound social basis. The last barrier to unmitigated progress was broken down when man devised a method of recording by graphic signs his past achievements. Thus a system of *writing* was developed (about 600 B.C. in Europe) which made the keeping of a permanent historical record possible, and ushered in that which is usually known as the Historic Period—the final stage of civilization proper.

CHAPTER VI.

THE DISTRIBUTION OF RACES.

HAVING briefly traced the early history of mankind through the various stages of hunting and fishing, pastoral life, agriculture, stone, and metal industry, and having glanced at the accompanying social, economic and religious organization, we now turn to an ethnological investigation of the distribution over the earth of the races formed by man's development through the family and tribal stages into national life.

The tenth chapter of Genesis has been called the oldest ethnological record extant. But the statement is not strictly accurate, since, on the one hand, the evidence of archaeological inscriptions shows older classifications of races; and, on the other hand, Genesis x., as Professor Sayce points out,¹ is ethnographical rather than ethnological. It merely describes from the geographical standpoint such races as came within the horizon of the writer. Thus, the Egyptian and Canaanite are classed

¹ *Races of the Old Testament*, chap. iii.

together, while the Semitic Assyrian and non-Semitic Elamite are both represented as the children of Shem. In fact the narrative does not profess to throw any light upon modern ethnological investigation any more than Chapters i.-ix. are of anthropological value. Therefore little help can be derived from this source in our present enquiry.

Ethnology (ἔθνος, race ; and λόγος, science) is usually regarded as that section of anthropology which deals systematically with the various branches of mankind in detail. The questions, therefore, upon which it is called to throw some light are those of the origin, primeval home, early migrations, and racial classification of mankind, and the effects of contact of the different members of the human family.

In considering the origin and antiquity of man we came to the conclusion that man evolved from a common precursor early in the Pliocene epoch contemporary with pre-Chellean implements. From this common ancestor two stocks were produced in Europe—the Neanderthal and the Eoanthropus-Galley Hill-Cro-Magnon species of the human organism. Towards the end of the Glacial period the Neanderthal type became extinct, while the Piltdown-Galley Hill race survived as Aurignacian and Cro-Magnon man. On this hypothesis, the remains found at Grimaldi may represent a

fusion between the types in Europe at the latter part of the Pleistocene epoch.

This theory may seem to conflict with the generally accepted view among anthropologists that Pleistocene man was specifically one. Thus Broca argues that the complete and permanent fertility of unions between all races *inter se* proves their common descent from one stock. If distinct human species originated in Pliocene or early Pleistocene times *kakogenesis* (racial unfertility) rather than *eugenesis* would result. Again, Tylor has maintained that "all tribes of men, from the blackest to the whitest, the most savage to the most cultured, have such general likeness, in the structure of their bodies and the working of their minds, as is easiest and best accounted for by their being descended from a common ancestor, however distant."¹ On the other hand, Abel Hovelacque says that languages differ to such an extent that this fact alone is "sufficient proof of the original plurality of the races that have been developed with them." This latter argument is open to the objection that race and speech are not convertible terms, that there is no arguing from one to the other, therefore the theory is based on a fallacy.

But, it has been shown, the "osseous remains" of Palaeolithic man show a divergence of type that makes the hitherto simple theory of a gradual

¹ *Anthropology*, p. 5.

continuous development upwards from *Pithecanthropus* and *Homo Heidelbergensis* to *Homo Recens* untenable. Had Tylor been acquainted with the Piltdown and Galley Hill remains he would probably have modified his remarks. The discovery of a human form, wherein the features of modern man are represented, at the close of the Pliocene or the beginning of the Pleistocene is an almost insurmountable difficulty to any theory of a continuous evolution from a single stock. If the Piltdown-Galley Hill-Cro-Magnon type really goes back to the early Drift period, then we must believe that from the earliest times there co-existed in Europe at least two stocks, and these so distinct that they point to the existence of a man sufficiently high to serve as a common ancestor of both. *Pithecanthropus* does not, in our opinion, represent either a precursor or an early phase of Neanderthal man, but a development on lines of its own.

Now at some particular moment the two distinctively human powers—tool-making and the erect attitude—must have reached the required point of development to bring into being *Homo primigenius*, with the potentiality of a complete human being, composed of body, mind and spirit. Did this momentous event take place in several places more or less about the same time? It is improbable that all the necessary conditions would

be fulfilled at a given moment in more than one spot, since a steady growth and specialization of brain development is implied in the evolution of the human organism, which could hardly have coincided simultaneously in several ancestors. In this sense, therefore, the human race appears to be derived from a single ancestor. But as soon as the first step had been taken, man would become fruitful and multiply and replenish the earth, so that by the beginning of the Pleistocene at least two forms of man were in existence in Europe, specifically one, perhaps, but nevertheless differing widely in physical features and mental development. On this hypothesis the specific unity of mankind is sufficiently maintained to avoid *kakogenesis* resulting from the union of the races evolved from the two stocks. We, therefore, are ready to admit that "God has made of one blood all the nations of the earth," but at the same time maintaining that the "osseous remains" of Palaeolithic man suggests the co-existence in Europe of at least two stocks from the earliest times, of which one (the Neanderthal race) became extinct, the other surviving as Aurignacian and Cro-Magnon man.

The second problem that faces us is the racial affinities of Neolithic man. Some anthropologists have tried to prove that the Neanderthal-Spy race survived the Palaeolithic Age as the dolichocephalic Europeans, while Professor Keith makes

the inhabitants of Europe the descendants of the Galley Hill-Combe Capelle type. That there was no hiatus between the Palaeolithic and Neolithic periods is proved by the discoveries at the cavern of Mas-d'Azil, which represent an intermediate stage between the old and new Stone Age. Here there is evidence of Palaeolithic hunters living side by side with existing types of animals, but unacquainted with the use of pottery, though possibly they were in the earliest stages of agriculture. We have, therefore, no reason for supposing that the transition from the Palaeolithic to the Neolithic period was marked by the appearance of a new and higher type of man, although some archaeologists have suggested that the changes in the mode of life during Neolithic times can only be accounted for by assuming the immigration of the new races into Europe at the close of the Pleistocene epoch. This assumption is not supported by an examination of the physical type of Neolithic man. Prof. Keith has shown that the Neolithic men of Britain were of short stature, with rather large heads in which the width was about seventy-five per cent. of the length. It was, in fact, characteristic of the "river bed type."¹ Furthermore, he shows that the same long-headed form is not confined to Neolithic England. Similar types have been found in Malta and Egypt; and therefore he concludes

¹ *Antiquity of Man*, pp. 1-45.

that "Sergi's Mediterranean race had heads which in size and form were of the 'river bed' type."¹ De Quatrefages identifies the Cro-Magnon with the tall, dolichocephalic, fair-skinned and blue-eyed Berbers (Hamites) who still survive in various parts of Mauretania. To these Neolithic Afro-Europeans are also credited the erection of the megalithic monuments, barrows, etc., strewn over Europe and North Africa.

Although there is such a variation in type in Palaeolithic man, yet one feature remains almost constant throughout the Pleistocene period. The human skull, whether it be of *Eoanthropus* or a *Neanderthaler*, or of one of the skeletons in *Grottes-des-enfants*, is always dolichocephalic. The only exception to this universal rule is in the case of the brachycephalic skulls of *Furfooz*, *Grenelle* and *La Trouchère*. It is, of course, possible that a round-headed race existed in Europe in the *Solutréan* epoch, but until more convincing evidence is produced in favour of this view these three finds must be regarded as the exceptions that prove the rule. The evolution of the forms of the head seems to have proceeded on definite lines from the long, wide, flat anthropoid skull, through the long, moderately wide and flattened form in early Pleistocene times, and the long, narrow, and high skull of later primeval man, to the short, wide, and high form

¹ *Op. cit.* p. 15.

which characterises the higher races of mankind. Therefore, as far as physical features are concerned, the long-headed type is more primeval and anthropoid than the round form of head. Bearing this fact in mind, we can proceed to investigate the Neolithic people of Europe from the standpoint of physical anthropology.

A number of skulls found in Neolithic barrows, megaliths, etc., exhibit an intermixture of brachycephals and dolichocephals. On the hypothesis that the long type of head is the older form, we should separate the dolichocephals as the ancestors of the primitive inhabitants of Europe. But who are the brachycephals who appear to have intermingled with the dolichocephals in the plains of the north-east and in the Alpine region, and thus modified the primitive type? The labours of Sergi, Ripley, Deniker and others have shed considerable light on the complex problem of the origin and distribution of races in Europe, and the reader who wishes to investigate the evidence is advised to consult the works of these authorities. We cannot here attempt to give more than the briefest outline of the results of their researches as generally accepted by ethnologists to-day.

Before the close of the Neolithic age numerous round-headed people, known as the *Mediterraneans*, came into the continent from the south and dominated the Mediterranean region. These intermingled

with the earlier long-headed type, becoming more and more numerous, till at last they became the predominant type on the southern coast. In the Bronze Age another stream of brunette brachycephals poured into Europe from the East along the mountainous area.¹ These were the *Alpines* who settled on the high lands in the centre and in a northerly direction. The Mediterraneans appear to have penetrated the west coast of Europe as far as Britain in Neolithic times, and eastwards to the Rhine and Upper Danube. The Pygmy dolichocephals, whose remains have been found in Neolithic sites in Switzerland, may possibly be representatives of a race that has disappeared. During the Neolithic period the forerunners of the Alpine race extended westwards along the central mountainous forest-region and up the valley of the Danube, settling in Central France. The *Northern* or *Nordic* race of blond dolichocephalic giants, whose place of origin and purest survivals still are around the shores of the Baltic and in Southern Scandinavia, did not penetrate the mountain barrier till later. These people represent the forefathers of the fair-haired Anglo-Saxons, Scandinavians, and Teutons—*Homo Europaeus* of Linnaeus, the “greasy seven-foot giants” of Roman times. It has been suggested by Schliz that the skulls of

¹ It is possible that these people were descendants of the Palaeolithic brachycephals. Cf. p. 48.

Alamanni and Frisians bear a striking resemblance to that of Brunn,¹ while the Swedish head-form is not unlike that of Cro-Magnon man. This similarity has led some anthropologists to suppose that the Nordics were the direct descendants of the Cro-Magnons and Azilians who survived in Northern and Western Europe chiefly in the forest country, by the rivers and on the sea shore, till their territory was encroached upon by invading brachycephals.²

Be this as it may, it is certain that in late Neolithic and Bronze Age times waves of Brachycephalous Asiatics spread across Western Germany to Denmark and the south-west of Norway, where they came into contact with the tall, fair, dolichocephals of the Nordic race. Thus in north-central Europe a tall, brachycephalic people arose who, though acquainted with the use of bronze, still practised a Neolithic manner of life. These people are usually supposed to be responsible for the introduction of round barrows into Britain. In this way arose Dr. Thurnam's aphorism, "long barrows, long skulls; round barrows, short skulls." This statement is not strictly accurate,³ although it undoubtedly conveys an important ethnological fact, which is thus stated by Prof. Rolleston: "In no skull from any long barrow, that is to say, in no skull undoubtedly of the Stone Age examined

¹*Arch. f. Anthropol.* 1908-09. ² Scott Elliot, *Prehistoric Man*, p. 230.

³ An interesting though not altogether convincing criticism of his statement appears in *Man*, xix. 8, Aug. 1919.

by us has the breadth been found to bear so high a relation as that of 80:100 of the length.”¹

The earlier Neolithic inhabitants of Britain, like those of the rest of Europe, were characterised by uniformly long narrow skulls, such as are represented by the human remains found at Tilbury, Dartford, and Walton-on-the-Naze.² These “river bed” people, according to Keith, were the descendants of the Palaeolithic races who continued to inhabit Britain after it became separated from Europe till the Neolithic immigrants poured into the country from the continent. First came the dolichocephals, who, being in a Neolithic stage of culture, brought with them the knowledge of the art of pottery-making, agriculture, and the domestication of animals. They disposed of their dead in megalithic tombs or long barrows, and thus apparently migrated westwards from Kent through Wiltshire, Gloucestershire, and Somersetshire, proceeding to the North of Britain and to Ireland by way of the west coast.

In the Bronze Age a tall, brachycephalic people, compared by Prof. Rolleston to the modern Dane, appeared on the scene, from North-Central Europe, and brought the fashion of erecting circular and more or less conical barrows into Britain. According to Rice Holmes bronze was introduced into the

¹ W. Greenwell, *British Barrows*, p. 637.

² *Ancient Types of Man*, pp. 1-27.

country by more typical members of the Alpine race, somewhere about 1800 B.C.¹ The Hon. John Abercromby thinks these brachycephalic invaders came from the Rhine district and introduced the type of sepulchral ceramic known as the Beaker, which is frequently found beside the corpse in Bronze Age burials.² About 800 B.C. the invasions of the Celtic-speaking peoples probably began, introducing the Late Celtic civilization. The last of the racial elements which entered into the ethnic composition of the inhabitants of Britain were the tall, blond, dolichocephals of the Nordic race.

Meanwhile in Europe the lake-dwellers descended on the Danube side of the Alps and formed a civilization, influenced slightly by Minoan culture,³ that developed to such an extent in the Bronze Age that it was able to give a lead to the settlers in the Po valley. During the Neolithic period Alpine tribes had occupied the lake-dwellings of Switzerland, and were, according to M. Hamy, the first Gauls. They were replaced in their original home by a dolichocephalic people of Northern type till, in the process of time, a brachycephalic race again inhabited the region, and still

¹ *Ancient Britain*, i. pp. 424-454.

² *A Study of Bronze Age Pottery*, vol. ii. pp. 98 ff.

³ The civilization which began in Crete in the fourth millennium B.C. and eventually dominated the Aegean and a large part of the Mediterranean basin, has been termed "Minoan" by Sir A. Evans from the legendary king and law-giver of Crete.

survives in the population of to-day. The Umbrians passed south into Italy during the Bronze Age, but were checked and driven up into the Apennines by the rise of the Etruscan power. The Achaeans—a mixed people of Nordic and Alpine descent—overcame the bronze-using inhabitants of Greece about 1450 B.C. Later the Cimmerians wandered into Thrace and crossed over Asia Minor, while others, when hard pressed by the Scythians, passed round the east side of the Black Sea to Asia Minor. Celtic-speaking peoples began to cross the Rhine into France, where they were firmly established by the seventh century B.C. Then apparently they proceeded to Spain and Italy, and finally broke up the Etruscan empire and took Rome (390 B.C.).¹ At a later period the half-Teutonic Brythons, or Belgae of Caesar, conquered North-East France and Southern Britain. Thenceforward the complicated movements in historic Europe were chiefly concerned with Teutonic races, and, therefore, hardly come within the scope of this chapter.

The researches of anthropologists and archaeologists in North Africa and Mesopotamia have now established the fact that man of “European features” is distributed over a wide area, and not confined to this continent. In Egypt Prof. Petrie discovered in 1897 the portrait statue of Prince

¹ Cf. A. C. Haddon, *The Wanderings of Peoples*, pp. 41 ff.

Nenkhetftha of the Fifth Dynasty (3700 B.C.), whose features were those of the highest human type. This evidence is supported by the older portrait of Enshagsagna, who reigned over the Babylonian Akkad about 4500 B.C., whose features recall those of a Semite or a European. This wide distribution of the white division of man—*Europæus albus*—led Blumenbach to suggest the generic name of *Caucasic* for all peoples having these common features. Huxley further split up the division into (a) Xanthochroi or “fair whites,” and (b) Melanochroi or “dark whites.”¹ The first represented the tall, fair-skinned, blue-eyed, yellow-haired inhabitants of Northern Europe, North Africa, and parts of India. On the south and west it mixes with that of the Melanochroi, and on the north and east with that of the Mongoloids. The “dark whites” differ from the “fair whites” in the darkening of the complexion to an olive shade and of the eyes and hair to black. The former are also shorter and of lighter build than the latter. Many of the Celt-speaking peoples, Mediterraneans, Arabs, and a part of the population of India, belong to the Melanochroids. But inasmuch as the *Caucasic* division of mankind includes the brown Polynesian races of the Eastern Pacific, Hawaiians, Maoris, Samoans, etc., the proto-Malays or Indonesians, the Todas and the Ainus,

¹ *Man's Place in Nature*, pp. 230-232.

for purposes of ethnological research this division is too wide to be of much practical value, although it has been adopted by so eminent an ethnologist as Dr. A. H. Keane.

In Palaeolithic or in early Neolithic times Africa was connected with Europe by several land-bridges, the Mediterranean Sea being an inland lake. Primeval man could, therefore, easily wander from one continent to the other, which doubtless explains the presence of man of "European features" in North Africa in prehistoric ages. There is good reason to suppose that the human race did not originate in Africa, but that the main types in that continent reached their destination from Europe or Southern Asia. In the north of the continent and in Palestine implements have been found which cannot be distinguished in workmanship from those of the Chellean and Acheulean phases of the Palaeolithic culture in Europe. The quartz implements of Nubia and Rhodesia may be cited as examples. Similar forms have been discovered in Somaliland and South Africa and the researches of Mr. Henry Balfour in the Zambesi valley have brought to light artefacts showing a correspondence in type to those of the European river drift.¹ Since the geological

¹ Implements of the Northfleet type (mid Palaeolithic) have recently been found in the neighbourhood of Victoria West (Cape of Good Hope) and Somaliland, and Solutréan blades in the Siwa oasis (Sahara); cf. *Man*, July, 1919, pp. 104 f.

conditions are not as conclusive as in Europe and Madras, the African implements cannot definitely be said to be of the same age as their European counterparts, though their form and patination suggest an absolutely identical antiquity. It is, therefore, probable that they belong to an early Pleistocene culture. The distribution of these implements suggests that early man passed southwards, having come from the north and north-east, although the finds are too far removed from one another to enable us to be certain that they belong to one and the same primeval industry over the whole continent.

It has been suggested by a certain school of anthropologists that the pygmies represent the original human race, and that Africa is their cradle-land. Some even go so far as to believe that a dwarf negroid race at one time inhabited Northern Europe, and gave rise to the folk tales of elves, gnomes, fairies and goblins, but the evidence in support of this hypothesis is still to be produced. Those who regard the Indo-African continent, submerged by the Indian Ocean in comparatively recent geological times, as the original home of man, incline to the supposition that the pygmy races represent the most primitive type of modern man, and account for the present distribution of this people as due to migrations westward into the centre of Africa, and eastward

to the Malay Peninsula by way of the Eastern Archipelago, consequent upon the submergence of the Indo-African Continent. Dr. Keane, who considers the extinct Kalang pygmies as the aborigines of Java, makes this island the first region reached by primeval man and his Miocene precursor during the eastward migration from the subsiding Indo-African continent. In support of this theory he puts forth the case of *Pithecanthropus* as evidence of the actual existence of a Javanese prototype of the human race; but, as has been shown elsewhere, the Trinil remains have yet to be proved to be those of a human precursor.

Although the evidence in favour of the theory that pygmies constitute the most primitive type of modern man is insufficient, yet it must be admitted that the pigmy, both in physique and in habitat, does resemble primeval man in many particulars. The African group have dolichocephalic skulls, small brains, broad cheek-bones and noses, prognathic jaws, retreating chins, the curvature of the spine but slightly developed, and feet adapted to climbing. The Asiatic pygmies differ from those of Africa, by being brachycephalic, and, in one instance (the Veddah-pygmies), having wavy instead of woolly or "peppercorn" hair. The way of life of these latter people is very primitive, consisting merely of a simple hunting existence in the jungle, although they are apparently

acquainted with rudimentary musical instruments, such as the flute, and with the use of the bow and arrow, the latter being often poisoned.

In the present state of our knowledge all that can be said with any degree of certainty regarding the primeval inhabitants of Africa is that the primitive substratum of the population is formed of tall and black negroes in the north; of very short, brown skinned Negrilloes in the centre; and of the short, yellow, steatopygous Bushmen in the south. The Bushmen and Negrilloes are probably specialized varieties of the more primitive pygmy people, while the tall negro may represent another variety of one ancient Negroid stock.

The origin of the negro is an exceeding difficult matter to discover. Was the Chellean, who left his implements lying about all over the continent, the first negro, or was he simply undifferentiated *Homo primigenius*? We cannot say, but it seems that the basis of the native population in Africa is negro, though the present-day representatives show divergent characteristics as the result of a different manner of life. This, however, does not imply any difference in race or descent.

The cradle of the negro seems to have been the Sudan, or somewhere in the neighbourhood of the great lakes, whence he passed in a southerly direction, mixing with Negrilloes in the forest area, and the more northerly representatives of

the Bushmen in the high lands to the east. Here also he came into contact with the Hamitic people of European or Asiatic origin, migrating from Arabia, and thus a new type of negro was brought into being—the Bantu. The Hamites forced the negro stock into the marshes of the Nile Valley, and to the country north of the forest to the west coast where the primitive type of negro still survives. A new wave of migration followed that of the Hamites. These were the southern Semites or Hamarites, who crossed from the other side of the Red Sea. Probably as far back as the Neolithic period in Egypt they modified the Berbers, Ethiopians, and Negroes of the north-east of Africa, and some ethnologists think that the pre-Dynastic Egyptians belonged to the parent stock of both Hamite and Semite. The blond, tall, dolichocephalic Berbers who have inhabited North Africa from very early times may be descendants either of invaders belonging to the Nordic race, having come thither *via* France and Spain, and the Straits of Gibraltar or *via* Asia Minor or Greece. On the other hand, they may be descended from the Vandals who left Spain for Africa in A.D. 429.¹ A third theory regards them as remnants of an ancient race allied to the Aurignacians, a product of the Atlas Mountains.²

The original Egyptians appear to us to have been

¹ Mehlis, *Arch. f. Anthropol.* 1908.

² Sergi, *L'Uomo*.

a peaceful Libyan race, resembling the modern Algerian in manners and customs.¹ The Dynastic Egyptians are the result of an invading race—probably the Amorites fusing with the Libyans already in the country. In process of time a section of this new race proceeded along the coast westwards. Does this represent the migration that was responsible for the erection of the dolmens and stone monuments so prolific in this part of the continent? An Hamitic wave passed in a south-easterly direction and mingled with the Bushmen, and to a small degree with negroes, forming the Hottentots. Gradually the Bushmen were driven into the desert by the expanding Bantu tribes. By a similar process of tribal pressure the forest area was in due course peopled, from the north and north-east, and the Zambesi Valley.

Dr. Haddon thinks that man evolved somewhere in Southern Asia during the Pliocene or Miocene, possessed of a tendency to variability. The advent of the Glacial period started migrations which were

¹*J.A.I.* xxxi. pp. 252 f. (Petrie). The aboriginal population of Egypt apparently is represented by the steatopygous figures found in the earliest graves (cf. Petrie, *Arts and Crafts of Ancient Egypt*, p. 29. *Naqada*, vi.). In all probability these ancient people originated in Europe in Aurignacian times (cf. steatopygous designs in Aurignacian caves), and gradually penetrated southwards, traversing the whole length of Africa before arriving at the Cape, where they still survive in the Bushmen.

ultimately relaxed and accentuated during the genial episodes, and the return of the ice.¹ Just as there was more than one race in Europe in Palaeolithic times, so there were probably several varieties of man in Asia, which by Neolithic times may have become differentiated into distinct races. A mixture of dolichocephals and brachycephals would account for the rise of those obscure West Asiatic peoples whose affinities it is so difficult to explain. Thus he describes the tall, fair, dolichocephals of North Europe, and the dark, brachycephalic Mediterraneans as varieties of a common stock, the former (proto-Nordics) having their area of characterisation in the Steppes and migrating eastwards and westwards after the last glacial phase. Another branch of this stock passed into Southern Siberia and Russia as the Chudes, who erected the Kurgans or tumuli. The Mongol type was developed on the central plateaus and streamed into the surrounding lowlands in times of stress, while the western plateaus produced the Alpine race which migrated westwards on the highlands from the Hindu Kush to Brittany. The brachycephalic Turki and Ugrians are either descendants of a cross between the proto-Nordics and Alpines or of an intermediate variety. South of the plateaus brunette dolichocephals wandered to south-east China, India, and the adjacent

¹ *The Wanderings of Peoples*, pp. 15 ff.

islands, producing, at least in part, the Man-tse, Dravidians, Veddas, Sakai, Andamanese, and Semang.

The pre-Dravidians, survivors of whom may be found among these jungle tribes—the Veddas and Sakai—apparently occupied Ceylon, Malacca, the Philippines, the Celebes, and other islands before they had been separated from the Asiatic mainland. They may, therefore, be regarded as representing a lower race of great antiquity.

In Neolithic times successive waves of migration passed over Eastern Asia, the immigrants, for the most part, belonging to a stock bearing certain similarities to *Homo Europaeus*—wavy hair, white skin, hair on the face, etc.—of whom the Ghonds in India and the Ainus of Japan may be cited as examples. These were probably succeeded by the “Dolmen Race,” a people allied in physical type to the Mediterraneans. Megalithic monuments are common in parts of India, China, Japan, and the Pacific, and, as we have hitherto suggested,¹ it seems highly probable that they are the work of a single race in a series of migrations.

The wanderings of peoples in “Oceania”—a comprehensive term for all the insular lands dotted about the Pacific and Indian Oceans—have been the subject of much discussion by ethnologists in recent years. The ethnic affinities of the

¹ See p. 115.

Australians, for instance, are by no means clearly defined. Numerous theories have from time to time been put forth to explain their origin. Thus, Fr. Schmidt thinks that the myths associated with some of the evil spirits in the south-eastern tribes are the result of racial conflicts. Where the Crow race was victorious, Bunjil (Eaglehawk) was defeated ; elsewhere Mudgegong (Eaglehawk) was also defeated, but not by Crow.¹ He assumes the existence of a primary dark race (speaking a hypothetical "Austronesian" language) represented by the Crow, from which the Eaglehawk and Emu have sprung. Daramulun and Baiame, he thinks, were originally tribal heroes of the invaders from Indonesia. But the general theory is that they are a low branch of the Dravidians of India, a conclusion supported by their physical features which suggest a racial connexion with the Dravidians of the Deccan, and such technological evidence as the similarity of the canoes and the boomerangs among the two peoples. In the north-east the presence of the outrigger shows that the culture has been affected by influence from New Guinea and the Torres Straits. It seems therefore highly probable that at some remote period a Dravidian or, more likely, a pre-Dravidian migration into the continent took place and exterminated or amalgamated with the earlier negroid stock, intermediate

¹ *Anthropos*, iii.

between the Papuans and Negritoës. When Bass' Strait was formed those who were thus separated from the mainland may have become the ancestors of the now extinct Tasmanians, who, owing to their isolated habitat, never advanced beyond an early Palaeolithic phase of culture. The Tasmanians, however, resemble the Melanesians in culture and physical features rather than the Australian; but differs from them by possessing, like the Australian, an agglutinative language. Sergi's view that man originated in South America and migrated into Australia and Tasmania does not appear to be very probable.¹

The rest of the inhabitants of Oceania may be divided into two main groups: (1) Papuasians, which include the tall, very dark, frizzy-haired Papuans, and the shorter and less negroid Melanesians; and (2) Polynesians, who are easily distinguished by their wavy or straight hair, fair complexion, straight nose and projecting cheek-bones. The Micronesians are a subdivision of the Polynesians who exhibit traces of a Mongolian element. The Papuans occupy New Guinea and the islands of the Torres Straits. The Melanesians are found in the south-east of New Guinea and the neighbouring islands, including the archipelago from the Admiralties to Fiji and New Caledonia. The Polynesians inhabit the islands from Tonga to

¹ Cf. *Arch. f. Anthrop.* xi. 1912.

Easter Island and the Hawaiian group to New Zealand. The Micronesians occupy the islands to the north-west of Polynesia.

Dr. Rivers has recently put forth a theory of the culture migrations in Polynesia and Melanesia, based on a comparison of sociological with linguistic facts, and developed by a study of secret societies and modes of disposal of the dead.¹ He assumes the existence of an aboriginal element, which he terms pre-dual. Of this culture we hear little. The racial type he supposes to be negroid or pygmy. This black, woolly-haired race was subsequently modified by three streams of cultural influence coming in successively from Indonesia (Malay Archipelago). The first immigration combined with the aboriginal element to form a dual organization of society with matrilineal descent. These he calls the "Dual People." Other characteristics of this second stratum are the introduction of such practices as interment in a sitting posture, circumcision, communism, and gerontocracy (government by the old men). These immigrants, he believes, constituted the second stratum in Melanesia, and passed on to Polynesia, becoming the first stratum there.

In process of time a second wave of culture passed over the area. This Dr. Rivers describes by the expression "Kava People," whom he identifies

¹ *The History of Melanesian Society*, vol. ii. pp. 573 ff.

with the introduction of secret societies, individual marriage, patrilineal descent, the men's house, a more developed form of chieftainship, totemism, megaliths, money, the bow, the dog and the fowl. These form the third stratum in Melanesia, and the second and completing stratum in Polynesia. This very important immigration occupies Rivers' chief attention. It turns out to be very complex, including several subordinate waves which, for example, introduced several varieties of totemism, and the two successive types of megalithic culture.

A fourth and last immigration was that of the "Betel People"—an influence that stopped short at North Melanesia (south of Santa Cruz, and north of the New Hebrides). This migration is supposed to have introduced head hunting, skull shrines, and pile dwellings.

This theory of culture migrations roughly corresponds to Grevner's "Bogen-kultur," except that Rivers makes the bow the characteristic weapon of the Kava people. That Oceania was inhabited by migrations on the lines suggested by Dr. Rivers is supported by the distribution of the fishing kite, the shark rattle, the float and gorge, the fish trap, and the process of fire-making with a flexible cane. Unfortunately, however, he takes no account of influence from three important regions: (1) New Guinea, (2) Micronesia, (3) America.

According to Dr. Haddon, the ethnology of the East Indian Archipelago appears to be as follows : ¹ The original inhabitants were a negroid race, of which aboriginal substratum the Andamanese (pygmies), the Aeta of the Philippines, the Semang of the Malay Peninsula, the pygmies of New Guinea, the Tasmanians, the Papuans, and the proto-Melanesian stock show traces. The second migration was that of a pre-Dravidian stock, to which the Sakai of the Malay Peninsula and the Australians belong. After a considerable time an Indonesian wave of migration, coming from the Ganges Valley, brought a dolichocephalic population into the area, which was followed by a stream of Mongoloid brachycephals termed Proto-Malays, who overran the islands and dominated and intermixed with the Indonesians. This intermixture, called Proto-Polynesians, drifted into the West Pacific and gave to the black, woolly-haired natives their language and some elements of higher culture, the resultant mixed peoples being the Melanesians.

In the present state of our knowledge it is impossible to speak with any degree of definiteness on this complex problem. It seems reasonable to suppose that the aboriginal element was negroid, and that the Polynesians were originally an island people living in the neighbourhood of the Ganges Valley, whence they migrated by way of Java to

¹ *The Wanderings of Peoples*, pp. 33 ff.

Fiji, Tonga, and Samoa. This appears to have been the centre from which the Eastern Pacific was peopled. Frequent intercourse seems to have taken place between the islands, and from time to time no doubt the coast of America was visited for purposes of barter. The Micronesians seem to be derived from a branch of the Polynesians, who separated from the rest and peopled Micronesia from west to east.

A further study of the migrations of early culture on the lines adopted by Dr. Rivers, Prof. Elliot Smith and others may throw light on the former existence of a widely spread Neolithic people in Eastern Asia and the Pacific allied to the Mediterranean race. There is a continuous chain of megalithic monuments from India to Japan, extending even to Easter Island, the most remote spot in Eastern Polynesia. Moreover, in this connexion, it is not without significance that the Polynesian presents certain resemblances in his physical features to *Homo Europaeus*, and that the Neolithic pottery of New Guinea and Japan is closely allied in design and workmanship.¹ We must, however, await further developments before pronouncing judgment on this attempt to unravel the complex problem of culture migrations in the Pacific.

To being a possible cradle-land of the human race

¹ Joyce, *J.A.I.* Dec. 1912, pp. 545 f.

America can put forth no claim, since there is no evidence of anthropoids or a common precursor ever having existed in the New World, therefore *Homo Americanus* must have reached his present home by immigration. Whence and when did he come? These are questions which have exercised the minds of anthropologists for some considerable time, and still the last word has not been uttered. Towards the end of the Tertiary period there was a land-bridge connecting North-West Europe with Greenland, which some geologists think lasted until post-glacial times, but this is improbable. Over this tricklings of men are supposed by Dr. Brinton to have passed into the Continent from Europe in the Pleistocene Age. Another theory is that man entered America (Alaska) from Siberia, the Aleutian Islands forming a bridge across the Pacific. But as these islands are 235 miles apart they can hardly be considered "stepping stones." Furthermore, it has been asserted that "the far North-West did not rise from the waves of the Pacific Ocean until after the Glacial period, and therefore the first inhabitants of America certainly did not get there in this way." But there is no evidence of pre-glacial man in the continent. The skull found by Whitney at Calaveras (California) which was said to belong to the Pliocene, is now regarded by all the most competent archaeologists to be of recent date. All things considered, there is little ground

for believing that the American aborigines (sometimes called Amerinds) were, in the Pliocene epoch, "cut off on this hemisphere from intercourse with the remainder of the world, and held in isolation by a change in land and distribution and by the continued glaciation of the northern portion of the continent," and thus "welded into an ethnic unity, which was unimpressed by outside influences until modern times."¹

There is no doubt that at one time the northern part of the continent was covered by a sheet of ice, which extended to the Ohio river, and therefore rendered immigrations into the country a difficult matter, except possibly from North East Asia along the southern part of the Pacific bridge. As there is no reason to suppose that a primordial species, *Homo Americanus*, arose like a *deus ex machina* on the spot, the primeval people who made the Palaeolithic implements of the Chellean and Mousterian type found in Mexico, in the graves of the Delaware, near Trenton (New Jersey), and elsewhere in the United States, must have reached the New World by way of land-bridges from Asia or Europe far back in the Pleistocene period. Since the Polynesians did not reach their present habitat till recent times the theory of cultural affinities with Polynesia cannot solve the problem of Drift Man in America.

The actual remains of the primeval race are

¹ F. S. Dellenbaugh, *N. Americans of Yesterday*, p. 458.

lamentably few, and those that exist are of very doubtful authenticity. It has already been remarked that the Calaveras skull is of little anthropological value, since the deposit has apparently been disturbed and the skull much damaged. What remains of the bones bears so striking a resemblance to modern skulls, that the two might easily belong to the same tribe. There is, therefore, no proof that the deposit and its contents are primitive. The skeleton found by Roth at Pontinel also inspires little confidence in many authorities. It is, however, on the remains of Lagoa Santa that De Quatrefages based his theory of a special American race.¹ In these Brazilian caves the skulls found in association with a number of animals, both extinct and living, are dolichocephalic, phenozygous, with prominent brow ridges, strong, slightly prognathous jaws, and, in one instance, there is the presence of a third trochanter. Although there is no geological evidence that the skulls are Palaeolithic, yet they are at least very ancient in type, and set forth a definite race. This Lagoa-Santa type undoubtedly represents the primeval element of the population, at least in South America, since descendants of the race are to be found in Eastern Brazil, in the south of Patagonia, Tierra del Fuego in Chile, and in California.² In Nebraska

¹ *Izviestia Soc. of Friends of Nat. Sci.* xxxv. 1879.

² Cf. Hrdlicka, *Bur. Amer. Ethn.* 33, 1907, and 52, 1912.

skulls have been discovered in what is thought to be loess, which are not of Indian type. Some of these are decidedly Neanderthaloid, although much more brachycephalic than the European examples of this race. It is, therefore, possible to say they may be the remains of a primeval race modified by later brachycephalic migrations. Again, in the kitchen middens near San Francisco skulls of early type have been discovered, having prominent brow ridges, and fairly long heads.

There is, therefore, evidence of at least two racial elements in America: dolichocephals, allied to glacial man in the Old World, overlaid by a brachycephalic migration.¹ Keane thinks that the dolichocephals, like the Eskimos, are descendants of the long-headed Palaeolithic races of Europe, while the brachycephals of Mexico are the result of a later Asiatic migration. The Europeans, he supposes, reached the continent by the Faroe-Iceland-Greenland route available in the Pleistocene age, and settled in the eastern side of the country, from the Eskimo domain to the extreme south, where they are still represented by the Botocudos and Fuegians. Mortillet adopts much the same view by imagining that Palaeolithic man followed the reindeer from Gaul northwards, and thus passed into America as the ancestor of the Eskimos, while Topinard, on anatomical grounds, anticipated

¹ A. H. Keane, *Man Past and Present*, p. 353.

this conclusion. On this hypothesis the Asiatic brachycephals and the European dolichocephals mingled in the south in the Palaeolithic Age, the Asiatics entering the continent by the Bering route. Though they represent a later migration they became the predominant type, which, as we shall see, was further modified by influence from Asia in later times.

The primeval inhabitants of the continent selected the best hunting-grounds, and probably first occupied the region between Mexico and Peru, leaving behind, perhaps, traces of their existence in the caves at Lagoa-Santa.¹ In process of time the ancestors of the American Indian arrived. That this was an Asiatic migration is suggested by the Mongoloid appearance so plainly visible in the modern American race. Since these new arrivals were but in the hunting stage of culture the work of "colonization" could hardly have begun with them. It is quite impossible to suppose that the great civilizations of Mexico, Bolivia, and Peru are the direct outcome of the work of the aborigines. It seems to us that the only reasonable explanation of the similarity of these cultures with those of ancient Asia is to regard them as the result of another Asiatic migration, that of the "Dolmen

¹ It is probable that the actual Lagoa-Santa remains are those of the aboriginal inhabitants slightly crossed with the later Red Indian.

People" of Eastern Asia. That a people allied to the Mediterranean race in manners, customs, and perhaps in features, reached the coasts of South America by way of Easter Island, bringing with them a higher and specialized culture, which gradually spread and developed from Peru to Mexico and elsewhere, is the only supposition that adequately accounts for the marked similarity of the civilizations of the Old and New Worlds. There is, in fact, a legend that tells of a fleet of boats from the north landing at Lambayeque, near Tumbes, on the Peruvian coast,¹ which, taken in conjunction with the similarity in culture and religion in the two areas, suggests the probability of this later Asiatic migration, bringing with it a knowledge of the domestication of animals, agriculture, the erection of megalithic monuments and, perhaps, a rudimentary conception of the manufacture and use of bronze.

No attempt has been made in this chapter to enter into a detailed classification of races, the object in view being merely to outline the manner in which the peopling of the earth was brought about by migration. We have been careful to refrain from describing the situation of the original cradle-land whence our Pleistocene ancestors set forth on their wanderings, since, in the present state of our knowledge, it is impossible to correctly

¹ Joyce, *Man*, 44, 1912.

estimate the actual spot. We incline to the view that "God has made of one blood all the nations of the earth," but that each division of mankind has had its Palaeolithic ancestors, who became differentiated into ethnic groups and races by the influence of their respective environments, etc. The movements of peoples have been due to many and various causes, amongst which the climatic changes that took place in the Palaeolithic age are by no means the least important.

Primeval man in the early Stone Age had probably not acquired any more definite knowledge of the art of navigation than that understood by the now extinct Tasmanians. But such knowledge was not needed to pass from one country to another as long as land-bridges existed. The most serious obstacle with which he would have to contend would be inland seas and broad estuaries, and these would not necessarily impede his movements if he possessed the rude rafts such as those used until recently by the aborigines in Tasmania. At the time of the first migrations the Indo-African continent, the existence of which has been established by the Indian Geological Survey, still presented almost continuous land between the Deccan, Madagascar, and South Africa. The inland seas (now nowhere exceeding fifty fathoms) had not yet separated Borneo, Java, and Sumatra from the mainland. Australia was connected with New Guinea by a

land-bridge at Torres Strait, Africa was joined to Europe in at least three places (Gibraltar, Tunis-Malta-Sicily-Italy, across the Aegean waters). Britain was part of the mainland, and continuous land existed in a north-westerly direction through the Faroe Islands, Iceland, Greenland, and North America. The New World was also connected with the Asiatic mainland by the "Miocene Bridge." This system of land communication made it possible for primeval man to move in all directions according to the exigencies of climatic and other conditions of his immediate environment. The food quest, the craving for riches, freedom from social, political or religious bondages act as the driving force to the movements of peoples, while geographical conditions, such as rivers, mountains, deserts, tend to control the migrations. Thus man, unlike any other animal, spread to every corner of the habitable globe, replenishing the earth and subduing it, having dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.

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Before concluding our investigation of the early history of mankind a word should be said on the *origin of languages*, a subject intimately associated with ethnological problems regarding the origin and distribution of races.

Since man from the beginning was a social being

living in family groups, it is inconceivable that even in his most undeveloped state he was without the means of communicating with those about him. It is difficult to believe that there ever was a time when speaking was an art not yet acquired by the human organism unless the existence of a primeval solitary man is presupposed, since language originates in the impulse to communicate with one another. At the same time it must be remembered that man does not merely speak because he thinks, but because his mouth and larynx act in conjunction with a certain convolution of the brain. That "man tried to make a speech as soon as he had learned to stand up on his hind legs" is a conclusion supported by evidence from the remains of Palaeolithic man. In order to secure easy, articulate speech it is a great advantage to have the floor of the mouth opened out. In anthropoids the lower border of the mandible encroaches on, and diminishes the area of, the floor of the mouth. In the most highly developed types of mankind the lower border of the mandible is widened, while in Neanderthal man the expansion of the mandible is less complete, yet sufficiently wide to allow of the possibility of speech. Therefore, Prof. Keith seems justified in concluding that "we cannot withhold such a faculty from Neanderthal man, such as the one found at La Chapelle-aux-Saints, who had a brain above that possessed by the

modern man. . . . If we allow full speech to the Mousterian man, we must, at least, assume the beginnings of such a faculty for Heidelberg man.”¹ Prof. Elliot Smith ² thinks that speech was in full process of evolution before the mandible, tongue and other parts connected with human utterance had become finally and fully adapted to their new functions. In support of this suggestion it may be said that the large teeth and jaw of the Heidelberg and Piltdown mandibles have a counterpart in the features of Neanderthal man, but associated with a brain capable of subserving the faculty of speech. We therefore incline to the view that when *Homo sapiens*, already a rational animal, defied glacial conditions by the use of fire, and the cave-bear with flint implements, he had language of an articulate kind by means of which he communicated with his fellow-men, and expressed in crude form the inmost feelings of his primeval soul.

But what of *Homo primigenius*? How far had he acquired the power of making his wants known to his fellow-men at the end of the Pliocene and the beginning of the Pleistocene? Elaboration of language depends on the mental state of those using it. Few wants and few ideas imply few words and little speech. Since the lower animals

¹ *Antiquity of Man*, p. 244.

² *Report Brit. Ass.* (Section H.), Dundee, 1912.

—birds, monkeys, apes, etc.—are not without the means of communication to the other members of their order, it is impossible to deny the same power to man in his earliest stages of evolution. His wants may have been few and primitive, yet, as we have shown, his mind and mouth were sufficiently developed to enable him to make those desires known, not by mere chatter or gesture but by *articulate* sounds. It, therefore, seems almost certain that *Homo primigenius* possessed at least the beginnings of the faculty of articulate speech, even in the earliest stages of his evolution.

Formerly it was supposed by philologists that language originated in imitative sounds representing the cries of animals, and the noises of inanimate objects, gestures playing the chief part in the most elementary forms of oral expression. But the modern anthropologist has not been able to discover sufficient evidence from people now living in a Palaeolithic stage of culture to justify this assumption. The Tasmanians, for example, who were almost an eolithic race in many respects, spoke a fairly developed language, just as to-day the Australians speak a tongue containing a complicated system of parts of speech, three numbers (a dual as well as a plural), but no genders. True, their vocabulary is deficient in abstract expressions, and in certain general terms. Species of fish, for instance, have individual names, but

taken collectively they are known as "food-in-water." There was, however, the promise of a healthy development in the primitive agglutinative languages spoken by the natives of Australia, had the race been better preserved, and freed from the evil influences of the white trader.

The other philological speculation of the last century that has been abandoned by anthropologists as futile, was the attempt to solve the problem of the distribution of races by constructing several main types of speech and tracing them back to a linguistic parting of the ways. In the first place, the farther languages are followed to their original source the more complicated they become, showing a regular "confusion of tongues" instead of the hoped-for primordial types. In Australia there are many languages, differing widely from one another both in structure and vocabulary, while among the Eskimos, although possessed of a remarkable uniformity in physical characters, mode of life, implements, etc., nearly fifty dialects have been distinguished in their language, the latter being absolutely unlike any other known tongue. In North America alone some fifty races have to be distinguished if diversity of speech be taken to indicate racial differences. Therefore, as Prof. Sayce rightly remarks, "philology and ethnology are not convertible terms."

“Identity of relationship of language can prove nothing more than social contact. The fact that the Kelts of Cornwall now speak English shows plainly under what social influence they have been brought. The Jews of Austria would never have put Spanish in the place of Hebrew had they not once have lived in close contact with the natives of Castile. Language is an aid to the historian, not to the ethnologist. So far as ethnology is concerned, identity or relationship of language can do no more than raise a presumption in favour of a common racial origin. When all else—physical characteristics, habits and customs, religious beliefs and practices—indicate that two populations belong to the same race, similarity of language will furnish additional and subsidiary evidence, but not otherwise. If ethnology demonstrates kinship of race, kinship of speech may be used to support the argument; but we cannot reverse the process, and argue from language to race. To do so is to repeat the error of the third-hand writers on language, who claim the black-skinned Hindu as a brother, on the ground of linguistic relationship, or identify the white race with the speakers of the Aryan tongues. All mankind may be descended from a single pair of ancestors, and yet the language they speak be derived from different centres; while, on the other hand, we may trace the languages of the globe back to a common source, and

yet believe that the several races of the world have had a diversity of origin.”¹

We are in absolute agreement with this view that language is not one of the characteristics of race, not one of those fixed and permanent features which distinguish the different ethnological types of man, although, on grounds hitherto explained, we take exception to the further statement that “language was not created until the several types of race had been fully fixed and determined. The Xanthocroid and the Melanocroid, the white Albino and the American copperskin existed with their features already fixed and enduring before the first community evolved the infantile language of mankind.”² It is contrary to reason as well as to anatomical fact to suppose that groups of speechless Hominidae could have fashioned the “laurel-leaf” flint blades of the Solutréan period, designed the wall-paintings in the Magdalenian caves or erected the megalithic monuments in the Neolithic age, leave alone become highly specialized ethnic groups.

Language is a function of the social life, and since man was a “social animal” from the beginning, he therefore from the first spoke a language of an articulate kind. But it by no means follows that speech and race are convertible terms. It is quite possible there has been a time when “the

¹ *Science of Language*, ii. pp. 317 f.

² *Op. cit.* p. 318.

whole earth was of one language and of one speech," not that this common tongue was Hebrew or any of the existing Semitic languages, but a simple undeveloped form of speech suitable to the mental capacity and needs of primeval man. In process of time this language would become enriched and specialized as man's outline enlarged, and his manner of life assumed definite and distinct lines of development. The speech of the agriculturalist, for instance, would naturally differ from that of the ancient hunter, or dweller in cities. But beyond this it is impossible to indicate lines of linguistic evolution, as all traces of the development are lost in the diversity of tongues among modern primitive people. Therefore the philologist is not calculated to be able to throw much light on the complex ethnological problems briefly discussed in this chapter. His province, if he is to help the anthropologist, is to confine his attention to an analytic survey of existing primitive languages, and strive to find the historical setting for each group he thus studies.

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